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will be published in December as an 8-page leaflet which will be sent without charge to any subscriber for *The American City* on request.

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See pp. 21, 23, 24, 25, 26, 28, 141, 143, 145 for catalogs and publications on municipal and civil subjects.

List of coming conventions, page 137. **Index to Advertisements, page 186**

"Weavers of Speech"

To you, who each day
Take on anew your tasks
Along the lines that speech will go
Through city streets or far out
Upon some mountainside
Where you have blazed a trail
And kept it clear;
To you there comes from all who use the wires
A tribute for a job well done.

For these are not just still and idle strands
That stretch across a country vast and wide
But bearers
Of life's friendly words
And messages of high import
To people everywhere.

Not spectacular, your usual day,
Not in the headlines
Except they be of fire, or storm, or flood.
Then a grateful nation
Knows the full measure of your skill and worth.
And the fine spirit of service
Which puts truth and purpose
In this honored creed—
"The message must get through."

BELL TELEPHONE SYSTEM

Our Municipal Notebook

Municipalities Organize Food Conservation Programs

SPARKED by suggestions of President Truman's Citizens Food Committee, municipalities throughout the country have organized extended food-conservation activities. Last month, Charles Luckman, chairman of the committee, sent telegrams to more than 1,000 mayors and managers in cities of more than 10,000 population, asking that proclamations be issued in support of the Citizens Food Committee program. The following four points are being emphasized:

1. Eat no meat on Tuesday.
2. Eat no poultry or eggs on Thursday.
3. Save a slice of bread every day.
4. Restaurants to serve bread and butter only on request.

Municipal officials were also urged to appoint at once local citizens' food committees for the duration of the emergency, including representatives from all such organized community groups as churches, American Red Cross, schools, women's groups and labor, business, civic, veterans' and fraternal organizations. The national committee is furnishing factual data and information to enable the local committees to formulate effective community campaigns.

The Secretary of Agriculture, Clinton P. Anderson, and the National Garden Institute have also stressed the importance of reviving home and community garden programs to help meet the critical world needs for food, pointing out that the individual contributions of such gardens may not be large, but in total they can be tremendously significant in adding to our domestic total food supply. Twenty million "freedom gardens" should be set as a minimum goal for 1948, Secretary Anderson has declared.

For More Efficient Marketing Facilities

Still another undertaking that may point to ways and means of reducing costs of foods is a recently approved research project to develop and promote the construction of more efficient marketing facilities. This will be carried out by the Market Facilities Branch of the Production and Marketing Administration, Department of Agriculture. Trade and farm groups, state colleges and departments of agriculture, municipalities, planning commissions, civic bodies, and transportation and warehousing agencies will cooperate in the studies.

Specialists of the Department of Agriculture have pointed out that, in some cities, because of inadequate and antiquated marketing facilities and methods, it costs as much to move perishable foods from the city limits to consumers as it does to grow, pack, and transport the foods to the city. Lack of labor-saving devices and outmoded physical handling methods raise the cost of distribution, restrict the volume of movement, and result in quality deterioration and waste.

An Urgent Challenge To Municipal Officials

Municipal officials are in key positions to publicize and promote food conservation and production programs. Their responsibilities in this matter should not be taken lightly. The scarcest commodity in the world today is food, and upon it may depend the hopes of mankind for peace and security.

But food must not only be raised and saved; it must promptly be made available to the starving peoples of western Europe. Much can be done to that end by municipal officials and local civic leaders in urging prompt and favorable action on the Marshall plan by the special session of Congress which President Truman is convening on November 17.

New Canadian Planning Organizations

THE Canadian planning movement lately produced tangible results in the establishment of two new organizations—the Community Planning Association, furthering the cause of planning within laymen's groups, and the Institute of Professional Planners for those actively working in the planning field.

The Community Planning Association (Temporary Building, Ottawa) has held its first convention in Montreal with over 300 participants. Guest speakers were Hugh R. Pomeroy and Leslie Williams from the United States, and F. J. Osborn from Great Britain.

The Institute of Professional Planners was formed last month in Toronto with 35 members. President is J. Le May, Commissioner of Planning of the City of Toronto; secretary-treasurer is E. G. Faludi, planning consultant (24 Bloor Street, East, Toronto).

New York City's New Department Heads

Shown above are some of Mayor O'Dwyer's recent appointments in the New York City Administration shortly after the induction ceremonies on October 22. Left to right: William Rourke, Deputy Commissioner of Purchase; Mayor O'Dwyer; Frederick H. Zurmuhlen, Commissioner of Public Works; William Reid, chairman of the Board of Transportation, and John Splain, Commissioner of Purchase. Mr. Reid, a career man in city service since 1913, replaced Charles P. Gross, retired. Mr. Zurmuhlen, an engineer and architect, succeeded Mr. Splain as Commissioner of Public Works; Splain was named Commissioner of Purchase.

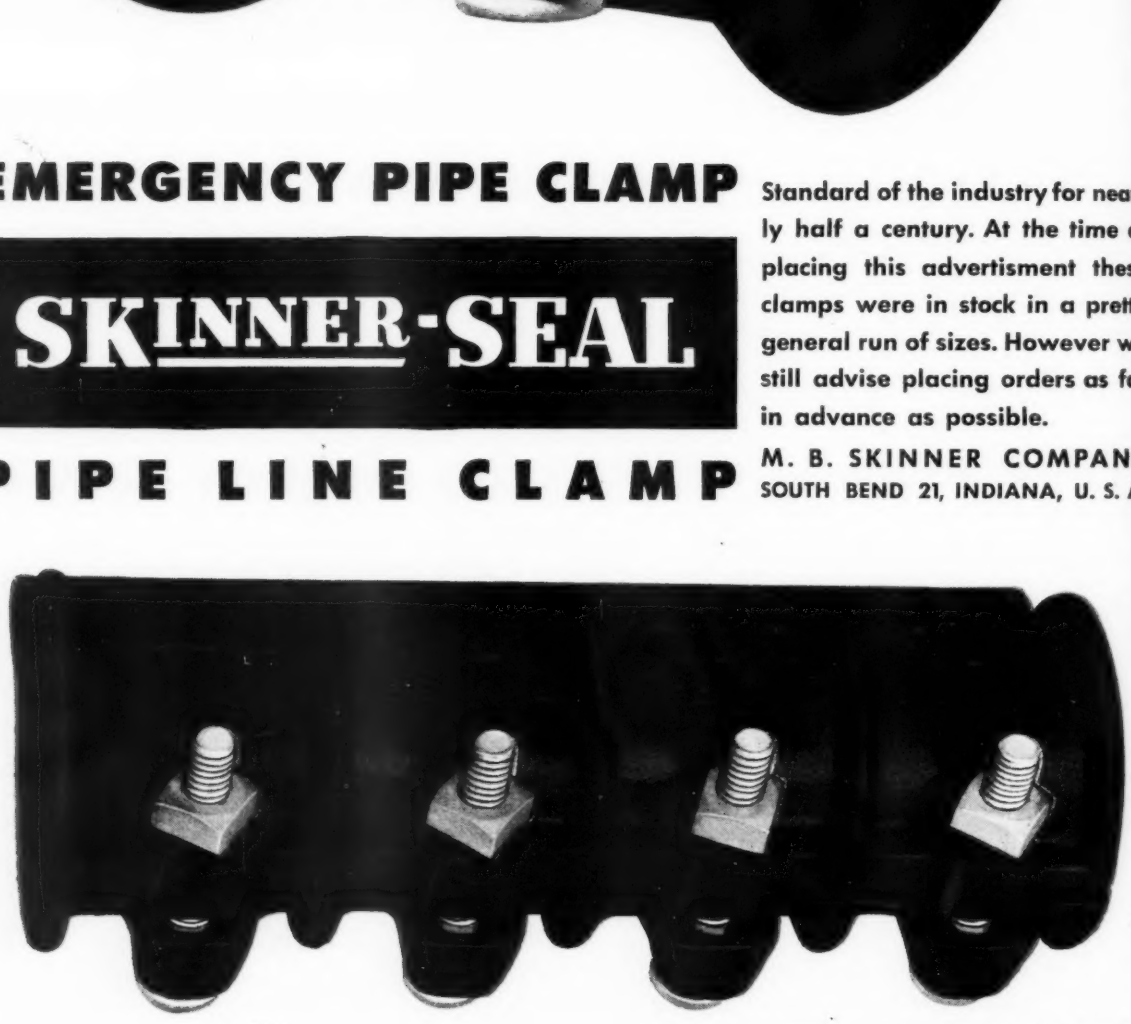
EMERGENCY PIPE CLAMP

SKINNER-SEAL

PIPE LINE CLAMP

Standard of the industry for nearly half a century. At the time of placing this advertisment these clamps were in stock in a pretty general run of sizes. However we still advise placing orders as far in advance as possible.

M. B. SKINNER COMPANY
SOUTH BEND 21, INDIANA, U. S. A.



Jersey City Approves New Redevelopment Project

PLANS have been approved by the Board of Commissioners of Jersey City, N. J., for a 653-unit garden apartment housing project to be erected by the Prudential Insurance Company under the provisions of the New Jersey Urban Redevelopment Law (the so-called Preiser Act). According to Prudential officials, a similar project is being studied in Newark.

The Jersey City proposal is the first under the Preiser Act, permitting municipalities to lease municipally owned land to persons or companies for housing. The planning commission and city officials had requested the Prudential Insurance Company to consider such a project and cooperated in facilitating its study and planning.

Prudential's application provides for leasing three tracts of vacant land, totaling about 20 acres. Most of the land, former site of a ball park, is already owned by the city. According to the Prudential report to the city commissioners, the new project, restricted to residents of Jersey City, "will permit the gradual relocation of persons now residing in present insanitary and congested areas."

Preliminary plans indicate that the apartments will be three-story brick, non-elevator, flat-roof dwellings, with heat provided from a central plant. Provision will be made for park grounds and recreational facilities. An open air parking lot and facilities are included, and there will also be parking offsets from the street to relieve traffic congestion and to afford easy access to the dwellings.

Tentative estimates place costs of the project at $4,059,500, including the cost of 100 garages. This is approximately $1,700 a room. On the basis of the estimate, the proposed rent schedule would start at $20 per room, but rentals will decrease as the buildings become older.

Under terms of Prudential's proposal, the land lease will run for an initial period of 35 years with renewal privileges in the event the capital investment made by the company is not amortized within that period. The housing project will revert to the city as soon as the investment has been completely amortized.

At the beginning of operation of the project, Jersey City will receive approximately $90,000 per year. This payment will consist of a ground rental equivalent to present taxes and 12% of the gross rentals. However, as rental income on the apartments decrease with the age of the project, the city's equity ownership increases.

In addition to the ground rental and 12% of the gross rentals, the city will share equally in net earnings in the event they exceed 4% up to 6%. All net earnings in excess of 6% will go to the city.

This architect's sketch shows the nine proposed apartment buildings.

Steel Needed for Signs and Signals

LACK of adequate supplies of sheet steel and pipe for construction of sorely needed traffic signals and lights, warning and direction signs, constitutes a definite threat to highway safety and convenience, the American Automobile Association states.

Such is the situation in the third year of the promised post-war utopia. It would be bad enough if steel for lunch boxes and merry-go-rounds were scarce. For traffic signals, warning and directional signs and street lights to be scarce from lack of materials with which to make them is ironical.

How can Presidential Traffic Safety Conferences and the millions of words on the tragic toll of crashes have maximum effectiveness if standard measures for relief cannot readily be applied? It is reported that steel for stop-signs and traffic signals can hardly be obtained inside 20 to 30 weeks; steel deliveries to the manufacturers are often running 8 to 12 months.

Reasons for the steel shortages are given as "only small quantities of steel are involved," and "a problem created by the fact that small purchases are involved." If these are reasons, they should not be insuperable when weighed against the human need. In 1941, the last prewar year, 37,000 lost their lives on our streets and highways; in 1946, the total, though down to 33,500, was certainly large enough to merit prompt installation of signs, signals, and street lights where they are now inadequate.

Big Cities Use More Municipal Manpower

THERE are almost twice as many municipal employes per unit population in cities over 1 million as in smaller communities, the Civil Service Assembly reports.

Recent U. S. Census Bureau figures reveal that in the nation's five biggest cities there is an average of one municipal employe for every 66 residents, while in the 985 cities between 10,000 and 100,000 population, there is only one employe for every 115 residents.

One-fourth of all the municipal employes in the U. S. currently work for the five U. S. cities over 1 million population each—Chicago, Detroit, Los Angeles, New York, and Philadelphia. These cities totaling 16 million people contain about 19% of the nation's urban population in incorporated areas.

The fact that municipal pay-scales in metropolitan areas often are higher than in rural communities adds to the expense of living in big cities. The 92 U. S. cities over 100,000 population employ 53% of all municipal employes and pay 67% of the nation's total city payroll. In smaller cities, however, a greater proportion of municipal employes work only part-time.

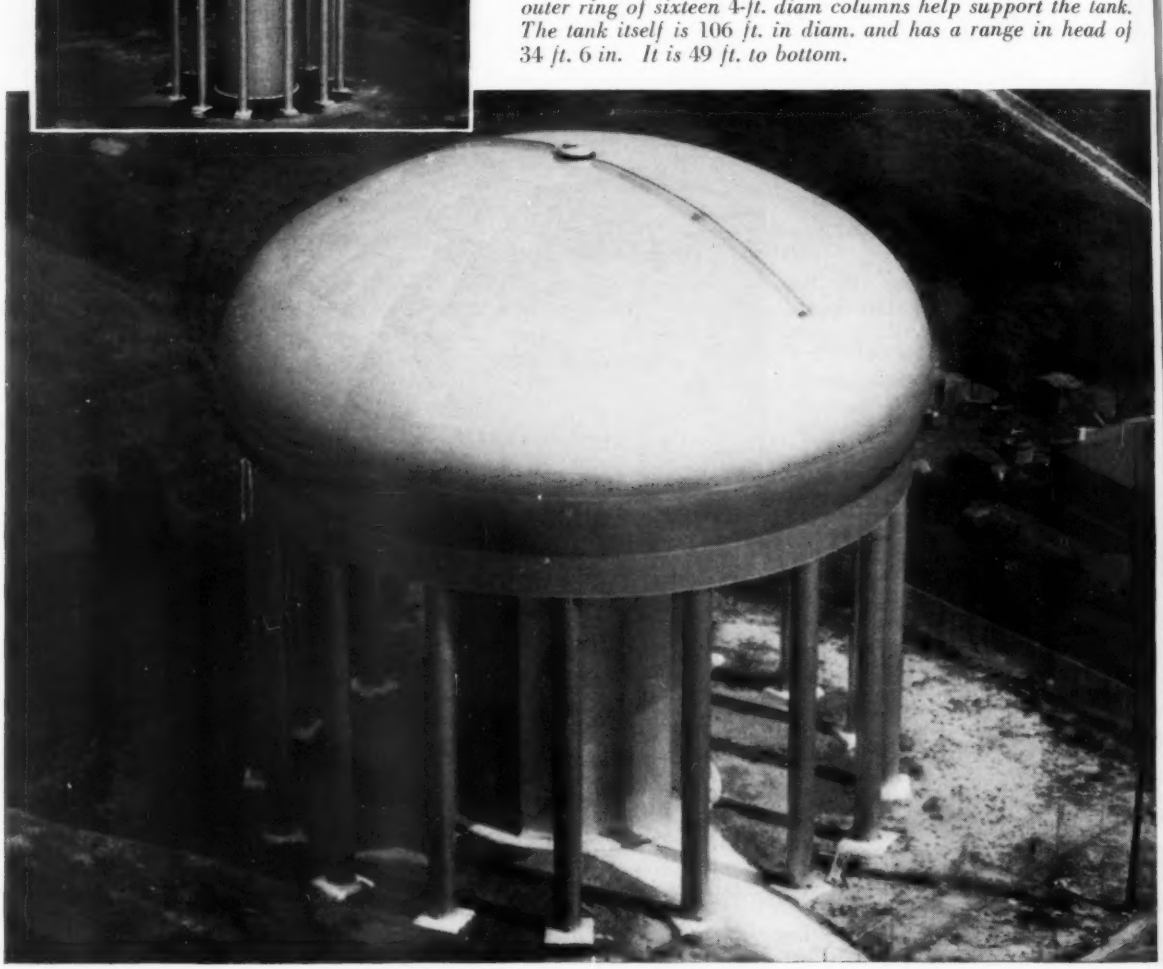
HORTON
SPHEROIDAL ELEVATED TANKS

Large capacity, highly functional design and streamlined beauty characterize these modern structures which provide gravity pressure in municipal water supply systems. Quotations on elevated tanks like these for your community available upon request.

• *Upper Left: This Horton spheroidal tank at Columbia, Mo. has a capacity of 1,000,000 gals. and is supported on two rings of cylindrical columns with a central riser of the same diameter. The height to bottom is 134 ft.*

Lower Left: This 1,000,000-gal. spheroidal tank is located at Jonesboro, Ark. It has an outer ring of cylindrical columns and a 33-ft. diam. central riser that is filled with water. The structure is 70 ft. to bottom.

Below: This 2,000,000-gal. Horton spheroidal elevated tank at Washington, D. C., presents a striking appearance with its 40-ft. diam. central fluted column. The tank is connected to the mains by a 5-ft. diam. riser inside of the central column. An outer ring of sixteen 4-ft. diam columns help support the tank. The tank itself is 106 ft. in diam. and has a range in head of 34 ft. 6 in. It is 49 ft. to bottom.



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Houston 1.....5601 Clinton Dr.	Los Angeles 14.....1403 Wm. Fox Bldg.	Atlanta 3.....2114 Healey Bldg.
Tulsa 3.....1625 Hunt Bldg.	Chicago 4.....2127 McCormick Bldg.	Havana .....402 Abreu Bldg.
New York 6.....3308—165 Broadway Bldg.	San Francisco 11....1233-22 Battery Street Bldg.	Detroit 26.....1501 Lafayette Bldg.

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PENNSYLVANIA

Water Supply and Treatment

What About Water Main Extensions?

IN INDIANA, says Lewis Finch, Chief Engineer of the Indianapolis Water Company, the Public Service Commission rules state that main extensions should be free when the estimated total cash revenue from the extension in six years equals the cost of extensions and is permanent in character. Customers to whom such credit is given, he says, may be required to contract to use service at least for four years. If the six-year revenue will not cover the extension cost, customers may be required to make a deposit with the utility which will be refunded as new customers go on the line. If the master plan of the distribution system calls for installation of a larger main in the extension than required to serve immediate demand and thus anticipate service to other areas, the rules state that the utility pays the difference.

Mr. Finch pointed this out before the Indiana Section of the American Water Works Association meeting in Indianapolis recently.

Auburn, Me., Builds New Dam

THE water supply for Auburn, Me., is a little more reliable now, since the Water District has completed its new concrete dam. This dam replaces an old wooden dam and gatehouse on the outlet brook at East Auburn. The new structure is anchored firmly to bedrock and provides a 9-foot-7¼-inch crest with elevation one foot below the top legal lake level. Also provided was a gate 4 feet wide and 5 feet high with bottom elevation 9 feet below the spillway level, and a 4-foot spillway at an elevation 4 feet below the crest of the dam.

Stop logs can be supplied in the spillway section, and flashboards can be used on the crest of the dam to raise the level of the lake to its legal height limit.

A concrete walk and guard rail across the top of the dam gives ready access to the gates and to the stop log section.

The project was built for a total cost of less than $6,000, under the direction of Lyndall K. Parker, Superintendent.

The new office building used by the Long Island, N. Y., Water Corporation.

Long Island Water Company Gets New Home

THE 63-year-old Long Island Water Corp., a company that serves 26 communities covering about 40 square miles, where more than 130,000 people reside, moved into a new home in July of this year. This consists of general offices for operating, commercial, and engineering departments, along with a garage and meter-testing shop. The building is located in Lynbrook.

The Corporation obtains its water supply from deep and shallow wells. The main pumping station, located at Valley Stream, has a capacity of about 14 mgd and is steam-operated. There are four other smaller pumping stations, three of which pump water from deep wells by electrically driven pumps into the distribution system. The fourth, an auxiliary station, pumps water from shallow wells also by electrically driven centrifugal pump. At present the total output of the corporation's plants is 12 to 14 mgd.

Indiana Acts to Conserve Ground Water

INDIANA'S first step in the control of ground water was contained in an act passed in the last General Assembly which called for air-conditioning water to be returned to the ground or recirculated or wasted to the sewer only with the specific permission of the Indiana Department of Conservation. This was pointed out by Charles H. Bechert, Director, Division of Water Resources, Indiana Department of Conservation, in a paper delivered before the Indiana Section of the American Water Works Association in Indianapolis.

The act arose over the realization that Indiana's ground water supplies are gradually receding. South Bend originally drew water from wells that flowed, but these wells now have to be pumped. In the South Bend area, the ground water table has dropped at the rate of from 0.25 to 0.85 feet per year since 1895. In Indianapolis, a decline of 11 feet has been recorded in the ground water level during the past ten years.

Indiana's surface supplies also are subject to a great variation. These streams account for a yearly flow of 25 million acre-feet of water, although at times the flow in many of them is only negligible. Large volumes are wasted most of the year, only to have the state suffer drought during the remaining portion.

Don't say "water consumption"—say "water use." Your customers do not consume water that you deliver to their homes. They merely receive it, use it briefly and send it to the sewers.

76¢

* PER METER PER YEAR
for MAINTENANCE PARTS
(Including Accident and Vandalism)

SOON OFF-SETS THE DIFFERENCE IN INITIAL FIRST COST . . . MAKES

Miller

LOWEST IN THE END

Long Life . . . Little Servicing . . . Low Annual Maintenance Cost

It's a matter of record — *this average of maintenance in hundreds of cities using MILLER Cumulative Meters, for many years, in all parts of the country—proving the true economy of MILLER meters. For in a parking meter, it's not initial cost but YEARS OF SERVICE PER DOLLAR that count. Is it any wonder that MILLERS have so frequently been given the preference over all other meters? *Send for summary of performance records.*

835 NO. WOOD STREET **DUNCAN METER CORP.** CHICAGO 22, ILL.

Sewerage and Sewage Treatment

Station Garbage Grinders

HERE are some design principles to be followed when fitting a garbage grinding station to the municipal sewerage system:

(1) That facilities should be provided for removal of garbage grit before this material goes to the digesters.

(2) That the increase in suspended solids at the plant will be approximately 25% to 35% and in BOD 18% to 26%, depending upon the solids in the raw garbage (if the raw garbage is of average strength).

(3) That the increase in strength of primary sewage after two hours of settling will be approximately 10% to 14% in suspended solids and 11% to 16% in BOD.

(4) That garbage matter is oxidized by activated sludge and probably by all secondary processes as efficiently as is sewage material, and therefore increased plant secondary units must be based upon the increased garbage load in the primary effluent.

(5) That for digestion of garbage, 3 cubic feet per capita of digester capacity is needed over and above the capacity usually provided for digestion of primary or combined primary and secondary sewage sludge.

(6) That the most economical means of dual disposal appears to be by direct addition of garbage to the digesters, unless central grinding stations are used.

(7) That the cost of garbage disposal at the sewage plant will be between $0.10 and $0.50 per ton.

This information has been collected by the Jeffrey Mfg. Co., Columbus, Ohio, and is part of the company's bulletin #796 devoted to station garbage grinders. These design principles are predicated on the garbage being added to the sewage at a rate of 2 tons per million gallons of sewage.

Glasgow's Sludge Excursion Boat

WHEN Glasgow, Scotland, disposes of its sewage sludge, the people of Glasgow can take an excursion free of charge down the Clyde River into the Firth of Clyde for a 30-mile trip.

The city owns two ships, the *Dalmarnock* and the *Shieldhall*, each of which can handle nearly 1,500 tons of liquid sludge in four tanks. The practice is to discharge the sludge in water 90 fathoms deep, where dilution will eliminate any nuisance problem. The cost of such sludge handling runs to sixpence per ton, or approximately 10 cents U. S. money.

Through the invitation of the City Commissioners, the people have the use of the ship free and may bring or arrange for their food. Picnics, outings, and political, civic, and other discussion groups are all popular aboard the *Dalmarnock* and the *Shieldhall*.

Hartley, Iowa, Holds Out and Gets Lower Costs

PART of the post-war program that the 1,500 people who compose Hartley, Iowa, promised themselves was a sewage treatment plant big enough to make the sewage from their municipality, with its produce and creamery industry wastes, no longer a public-health menace or a nuisance to their downstream neighbors. In October 1945, they retained Leon I. Schoel and Associates, Spencer, Iowa, consulting engineers, to prepare an estimate of cost and preliminary plans out of FWA funds. The original rough estimate for such a plant to supply high-rate trickling filter treatment ran to $58,000.

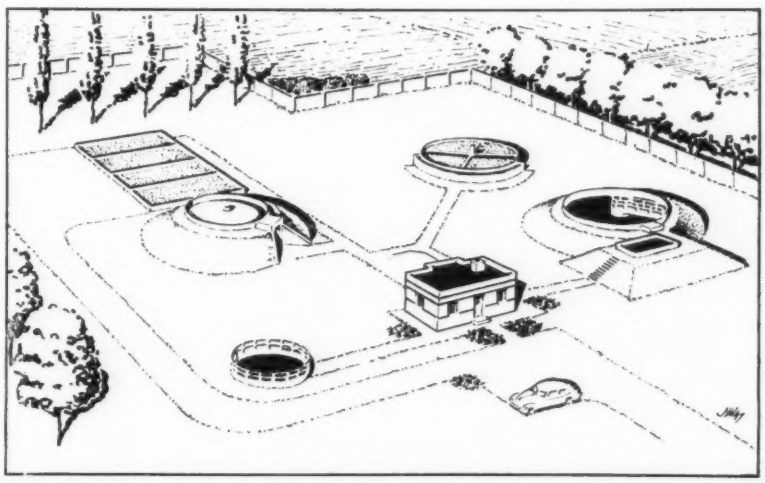
When plans and specifications had been completed and approved by the State Department of Health, this estimate was raised to $76,000. With that information at hand, they advertised for bids.

In March 1947, when they examined the bids, the work ranged from $92,000 to $105,000, which was more, they decided, than any increase in prices justified, despite the skittish condition of general price levels. They waited for a couple of months and again asked for bids. This time one of the contractors offered a bid of $83,460, a figure that the council felt was not unreasonable, and accordingly the bid was awarded.

The plant will provide primary treatment through a set of Dorr-equipped flocculators and primary clarifiers. The secondary treatment will consist of a 39-foot-diameter high-rate trickling filter, with a Dorr distributor followed by a non-mechanical final clarifier.

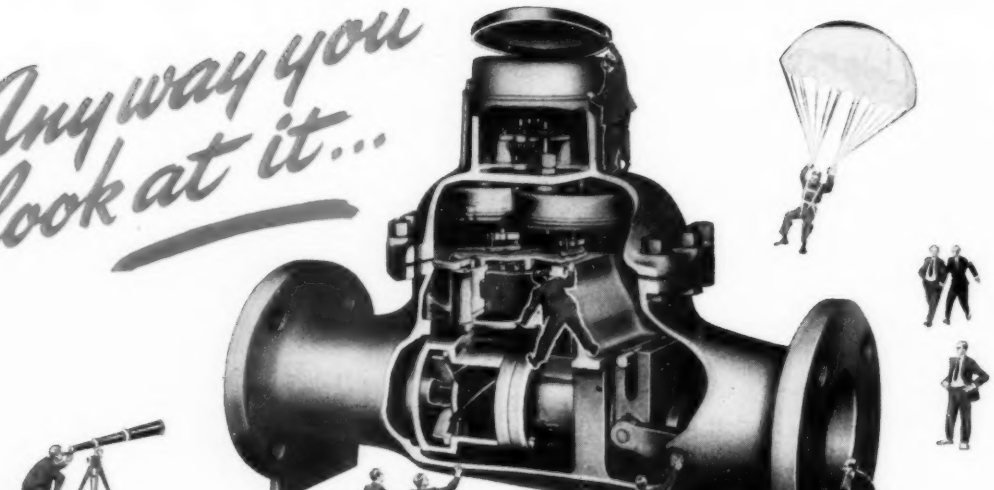
Sludge digestion will be aided by the sludge recirculation type of digester heating, with a Pacific Flush Tank Co. heat exchanger and a floating digester cover.

The community is financing the plant by a general bond issue and by money in the town's general fund.



A little wait in awarding contracts brought the price of this small sewage treatment plant in Hartley, Iowa, down nearly $10,000.

Any way you look at it...



You'll *Save* with this revolutionary compound meter

SAVE **time reading meters; eliminate errors**

In this meter alone, measurement by both the velocity and displacement metering units is recorded on a *single* register. This feature speeds meter reading and eliminates the possibility of error in reading and adding together the totals of the two registers normally used on compound meters.

SAVE **in shipping, handling and installation**

Size for size this meter is more compact and lighter in weight than other compounds. One man can install a three inch Pittsburgh-Empire without special handling equipment.

SAVE **pressure absorption; gain greater accuracy**

A horizontally positioned propeller, mounted on hard rubber roller bearings combined with a positive, swing action valve provides a straight-through flow stream; cuts pressure loss and retains accuracy at the changeover point.

SAVE **on low flow rate accuracy**

Pittsburgh-Empire compounds are fitted with sensitive, time-proven Empire oscillating piston displacement meters to accurately measure the extremely low flow rates that, over a period of time, can accumulate into a surprisingly large volume.

SAVE **on maintenance and service**

The space conserving interior arrangement of parts has been engineered for maximum maintenance ease and accessibility. All units dismantle through the meter cover and, if necessary, can be serviced without removing the meter from the line.

Write for Bulletin W-803

PITTSBURGH · EMPIRE *Compound*

PITTSBURGH EQUITABLE METER DIVISION

ROCKWELL MANUFACTURING CO. PITTSBURGH 8, PA.

Atlanta Boston Chicago Houston Kansas City
Los Angeles New York Pittsburgh San Francisco Seattle Tulsa

Public Works Notes

From recent meetings of the American Public Works Association

Public Works Men Study Equipment Methods

HOW to make a leaf loader into a spraying unit was one of the feature attractions at the New York-New Jersey Metropolitan Chapter meeting held in Irvington, N. J. More than 100 Public Works men were present.

This particular combination unit was adapted by Richard Walter, Bureau of Public Works, Maplewood, N. J., on a vacuum leaf loader made by the American Structural Steel and Tank Co., Detroit, Mich. Supervisor Walter mounted a set of ½-inch pipes around the mouth of the blower and connected the pipes to a tank of the insecticide he wished to spray. A small compressor supplies the pressure that forces the liquid through the pipes and out the small jets into the air from the blower. This produces a fine spray. Insecticides of all types can be sprayed quickly and easily from this combination unit.

Another interesting public works apparatus was a mobile sewer maintenance and safety unit which includes various gas protective and anti-explosive devices. This was furnished by the Joint Meeting Sewer Commission, Elizabeth, N. J., represented by Leslie West, Manager, and Edward Decher, Secretary. The Joint Meeting plant played host to the Chapter by escorting members through its big sewage treatment plant notable for its careful design and operation. Assisting in the inspection tour was Elson T. Killam, consulting engineer, who participated in the design.

Another highlight of the meeting was an inspection of the Irvington incinerator. This consists of a Nye circular destructor which Superintendent of Incineration Jacob Christiansen rates at 140 tons per day, and a DeCarie basket-type incinerator which he rates at 80 tons per day. The Superintendent explained that much of the success of incinerator operation depends on skillful attention on the part of the workmen. And when a plant has this kind of attention, its operating costs go down sharply. The Irvington plant normally has a crew of four men and a crane operator. The rate of burning is encouraged by the crane operator's making small frequent loadings. Large buckets of refuse tend to lower the efficiency of the burning.

Many other exhibits by manufacturers of equipment useful to public works operation were shown at the meeting. These included mowers, shovels, pumps, and generators, as well as fire and rescue equipment. Prior to the banquet, the group visited the plant of the Smith Tractor and Equipment Company, located near Irvington.

Top: Public works men from the New York City area examine at close range equipment that makes operation of cities possible. Center: The insecticide Sprayer. Bottom: Leslie West, chief engineer of the Joint Meeting Sewerage Commission, Elizabeth, N. J., explains the fine points in the operation of his big 40-mgd plant.

Some Sanitary Fill Operating Figures

How many men are required to operate a sanitary fill?

A recent study by Carl Schneider, consulting engineer, New Orleans, La., indicates that the sanitary fill method requires an average of six men per 1,000 cubic yards of refuse disposed of per day. Much depends on the fill area being worked. For example, in Mr. Schneider's study, he showed that St. Petersburg, Fla., required 10.6 men per 1,000 cubic yards per day; however, this city is making an effort to reclaim tidal flats and is confronted with difficult operating problems. Where conditions are favorable, the ratio of men to 1,000 cubic yards drops as low as 3.3.

How much land is required by the sanitary fill?

The land requirements, according to this same study, average 7 acre feet per 10,000 people served per year. The variations are wide, however, with a high of 16.9 recorded in Dallas, Texas, and a low of 2.1 at Baltimore, Md. The ratio seems to drop as the depth of fill increases. However, the fill at Columbus, Ga., recording a ratio of 4.3 acre-feet per 10,000 population, and the one at Rockford, Ill., with a ratio of 6.3, both built to a six-foot depth, indicate that good results can be obtained from

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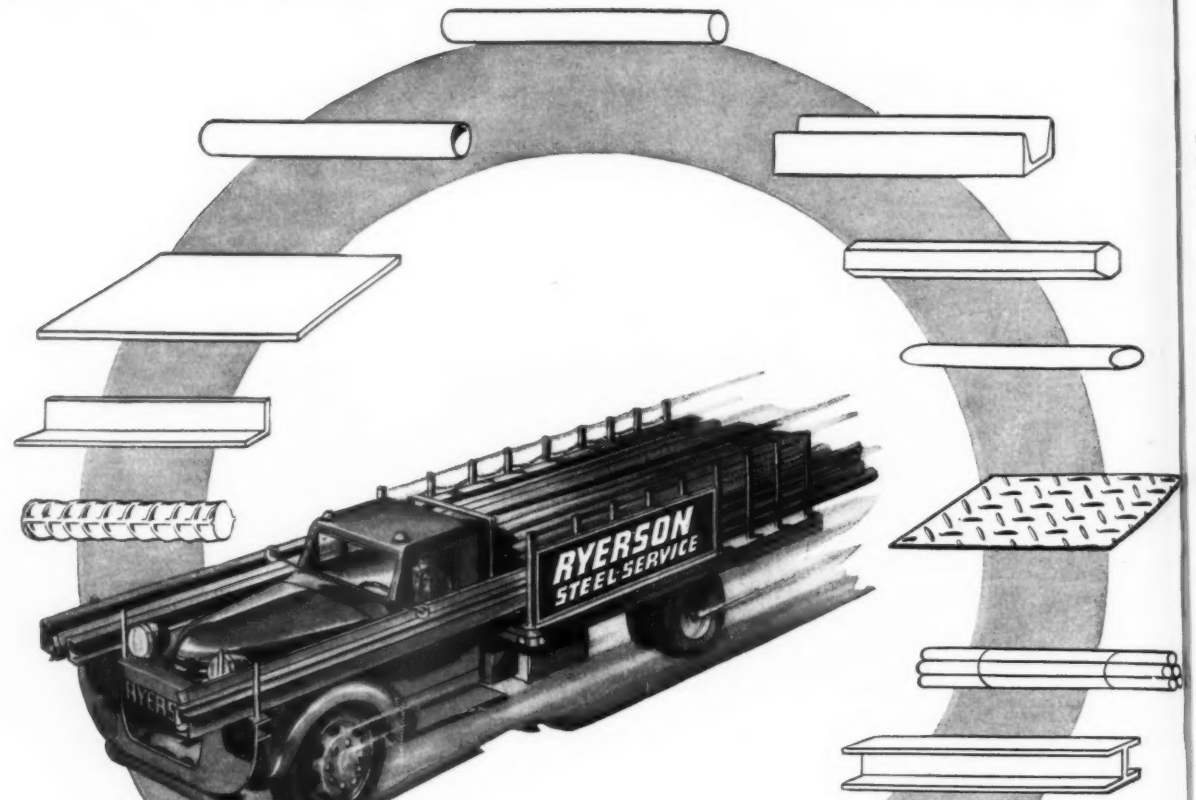

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Public Works Notes

(*Continued from Page* 13)

shallow fill areas. Fort Worth estimates that with the operation it uses, an acre of ground can accommodate 8,000 to 10,000 cubic feet of refuse.

How much settlement can you expect?

Most authorities agree that a fill will settle 25 to 45% before being "stabilized." In sampling fills that have been in place 18 to 25 years, Mr. Schneider found that they still contained 8½ to 13½% volatile combustible matter that presumably could still decompose. On a dry solids basis, this figure increases to 14½ to 28¼%.

These figures were disclosed as part of the report of the Committee on Refuse Collection and Disposal presented at the annual meeting of the American Public Works Association, held recently at Jacksonville, Fla.

Are Clean-Up Weeks Helpful?

ARE CLEAN-UP weeks helpful in keeping a community in an attractive condition? Newark, N. J., is of the opinion that they are. John S. Flockhart, Supervising Engineer, Bureau of Sanitation, Department of Parks and Public Property, told the American Public Works Association at its annual meeting held in Jacksonville recently that the benefits of a clean-up week are not so much from that added accumulation of refuse that will be collected as from the focusing of attention on the work and the benefits of good public relations that result. With a well-organized collection system, the added amount of refuse brought in during such a drive will be negligible.

Are voluntary civic groups helpful? Here again Newark believes that they are. Mr. Flockhart stated that Newark's Municipal Sanitation Commission consists of 15 representatives and includes men from the Chamber of Commerce, the Board of Education, the police department, and from manufacturers' groups. The committee is non-salaried, meets once a month, and assigns to each member a section of the city.

Some Fundamentals on Stream Pollution

HERE are some basic questions that were offered and answered by David B. Lee, Chief Sanitary Engineer, Florida State Board of Health, at the recent American Public Works Congress held in Jacksonville, Fla.

What is stream pollution?

Pollution of a stream at a given point may be said to result from the receipt by the stream of too much of anything that would reduce and impair its usefulness below the point of introduction.

What is the attitude of the people toward stream pollution?

The average man is conscious of tangible irritants. Those that offend his eyes and nose particularly disturb him. A stockyard, a chicken-killing establishment, a pile of ashes, debris, or scrap, are all health hazards to him. Thus it is extremely difficult for the average citizen to fully appreciate the various health, economic, and welfare hazards involved.

What is the need for stream pollution abatement?

The greatest need arises from the use of streams as a domestic water supply. The next greatest involves its use for the production of food. Ranking high in Florida is the use of streams and beaches for recreational purposes.

What factors are involved in stream pollution abatement?

A paramount consideration is that the abatement measures must not injure the state's industries.

Another factor recognizes the impracticability of waste treatment to fit the requirements for subsequent users.

Water Revenues Help Oneonta Become a Debt-Free City

THE STORY of how Oneonta, N. Y., became free from both municipal and school indebtedness was told by its city engineer, Frank M. Gurney, at the recent Buffalo meeting of the New York State Conference of Mayors and Other Municipal Officials.

"Many things were responsible," said Mr. Gurney; "the will to do it; conservative programs; the transfer of revenues from our Water Department which were used to reduce bonds and interest; a capital budget survey and the Planning Commission's annual report, which administrations followed rather closely; the increase in state funds, due to the utility taxes of the last two years, and now the Moore plan, which will assist us further."

Sewage Disposal Without Added Taxes

Among other improvements financed by Water Department surplus was a sewage disposal plant built in 1934 with a bond issue of $375,000. These bonds were retired in ten years by transfer of water department funds without any addition to the city's tax rate.

Some of the credit for the city's fine financial position is given by Mr. Gurney to Oneonta's Capital Budget and Planning Commission, established in 1938 and functioning ever since. Dr. Charles Hunt, president of State Teachers' College, is chairman, and Mr. Gurney has served as secretary since its inception.

Describing the activities of this Commission at the Buffalo meeting, Mr. Gurney said, in part:

"Of course, any capital budget study is city planning with a financial time schedule. In our studies on this Commission, we tried to analyze the kind of city we might expect in 10 years as to school population, excess of births over deaths, zone development on building, assessed valuation, franchise valuations, exemptions, and also tendencies of growth outside our city boundaries.

"Next a study of all incomes, such as special state tax refunds (now Moore Plan), licenses, county fees, city clerks' fees, city court fees, miscellaneous fees, property income, gifts and contributions, departmental earnings, water revenues, and school and library revenues outside of taxation. From these figures we saw what could be expected from income, and predictions were projected 10 years in the future.

"Again the costs of operations were studied for general city government, protection of persons and property, conservation of health, highways and bridges, street lighting, welfare, recreation, miscellaneous, indebtedness, operation of water department, schools, and library. Again we were able to see and anticipate our costs for the future.

"Then we set up a budget for 10 years in advance, giving us a yardstick for comparisons.

"Our predictions for general city procedures were rather close. Our school predictions were not so good. But it is interesting to note that no bonds were anticipated during these 10-year predictions, and no bonds were issued.

"Bond issues may be necessary in the future for emergencies, or possibly for a school building plan, but I know any such bond issued will be allowed only on a short-term basis and that the payments will be considered as part of our capital improvement plan.

"During the post-war years we have been spending our money for the replacement of obsolete equipment. That program will be completed next year. From then on we shall be able to maintain our city functions and, with a reasonable capital improvement program, go forward without getting into debt. At least, it is something pleasant to think about."

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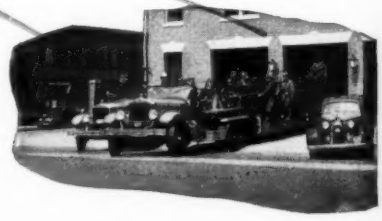

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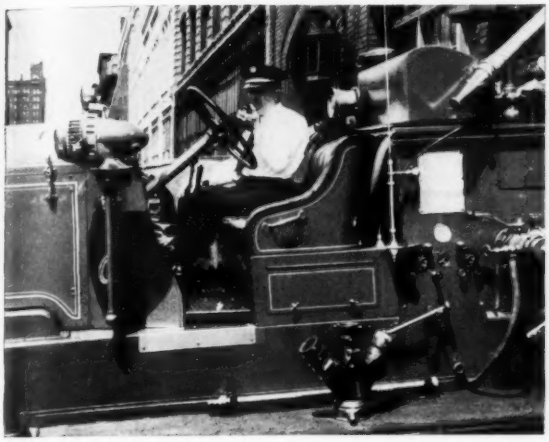

Left: Captain W. H. Johnson is trying out the radio apparatus on his Ward LaFrance pumping engine. Right: Chief George S. Lockhart of the Minneapolis Fire Department at the "mike" of his radio-equipped car.

Minneapolis Fire Apparatus Equipped With Two-Way Radios

By **GEORGE S. LOCKHART**
Chief, Fire Department
Minneapolis, Minn.

THE groundwork for one of our most important strides in fire-fighting methods was laid two years ago when the Minneapolis City Council moved that bids be advertised for two-way radio equipment for the fire department. In June 1946 bids were finally accepted, and the department was authorized to purchase initial equipment at a cost of $26,969, out of a total amount of $70,000 set up in the 1946 budget.

Last December, the Minneapolis fire department radio station, KCNX, with a 37.740-megacycle frequency, went into service. Added fire department personnel were four licensed radio operators and one radio supervisor, all civil service employes. Our regular signal dispatchers had to comply with the Federal Communications Commission requirement by passing an examination for radiotelephone operators' permits.

Two-way mobile Motorola radio units are now regular equipment on 43 pieces of fire apparatus. Radio receivers have been installed in our 21 engine houses. Receivers have been installed also in the homes of the superintendent of fire equipment and the superintendent of fire alarm; in the offices of department chiefs, deputy chiefs, and the superintendent of the fire prevention bureau, and in the repair shop. The installation of the aerial is on top of the Northwestern Bell Telephone Company building, across the street from City Hall, and the department's radio-transmitting apparatus is located in a room on the 26th floor of the same building.

At the fire-alarm headquarters we have a 250-watt transmitter and two master control units. Installed in the basement of City Hall, beneath our fire department, is a 10-kw gasoline driven generator which in an emergency will supply current for our equipment.

This installation is one of the greatest improvements in our department since the innovation of fire-fighting motor apparatus. Minneapolis, covering 58.79 square miles, is serviced by 28 fire companies—a small number for so large a city. This factor makes radio especially important, because on long runs in outlying districts all apparatus is in constant contact with our fire-alarm office from the time they leave quarters until they return. Fifty percent of our alarms are merely runs.

On the first day our radio went into service, some companies were summoned to a chimney fire. While there, through use of the new system, they were dispatched to another serious fire in the neighborhood. This is only one of the many instances in which our fire-department radio system has proved invaluable. After almost a year's use, we wonder how we ever managed without it. This new system has improved fire response; has accelerated the movement of apparatus to and from fires; and gives the people of Minneapolis more efficient fire protection.

Miami's Police Radios Weathered Hurricane

DESPITE hurricane gales lasting four hours and reaching velocities of 120 miles an hour, constant radio communications were maintained throughout the emergency over the Miami police department's 155-megacycle, 2-way radiotelephone system, according to Lt. Ben Demby, Superintendent of Communications of the Miami police and fire departments. Although practically all power supplies were interrupted, the Miami police radio system stayed on the air by switching over to auxiliary power supplies at radio headquarters.

Lt. Demby reported that the two 250-watt central-station FM transmitters and receivers sent and received clear signals regardless of how far cars were from headquarters or whether or not they were garaged. During the gale, radio cars covered their districts, reporting to headquarters extreme emergencies which required the immediate attention of fire fighters, disaster squads, doctors, and ambulances.

Radio reported damage and casualties immediately and advised of streets blocked with litter and debris. Radio cars and headquarters kept each other informed about collapsed buildings, fallen power lines, and boats in distress.

ALL AROUND OUTFIT THE YEAR 'ROUND

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1 cu. yd. standard bucket, tractor width — Heavy-duty bulldozer blade — All-purpose V-type — 2 cubic yard special bucket

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DIGS basements; loads sand, gravel, crushed rock and other material; backfills; builds streets; plows, moves and loads snow; handles numerous other jobs . . . including crane work and pulling scrapers.

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Engineered together and completely matched, the HD-5 and Tracto-Shovel bring you a new kind of performance. There is positive balance, full visibility, simple and convenient controls.

THIS COMPLETELY NEW TRACTOR provides 37 drawbar horsepower, more footing and greater traction, fast maneuvering, a highly responsive and economical GM Diesel engine with electric starting. There is greater operator comfort with wide arm rests, cushioned seat and self-energizing brakes. Servicing is simplified . . . greasing intervals lengthened.

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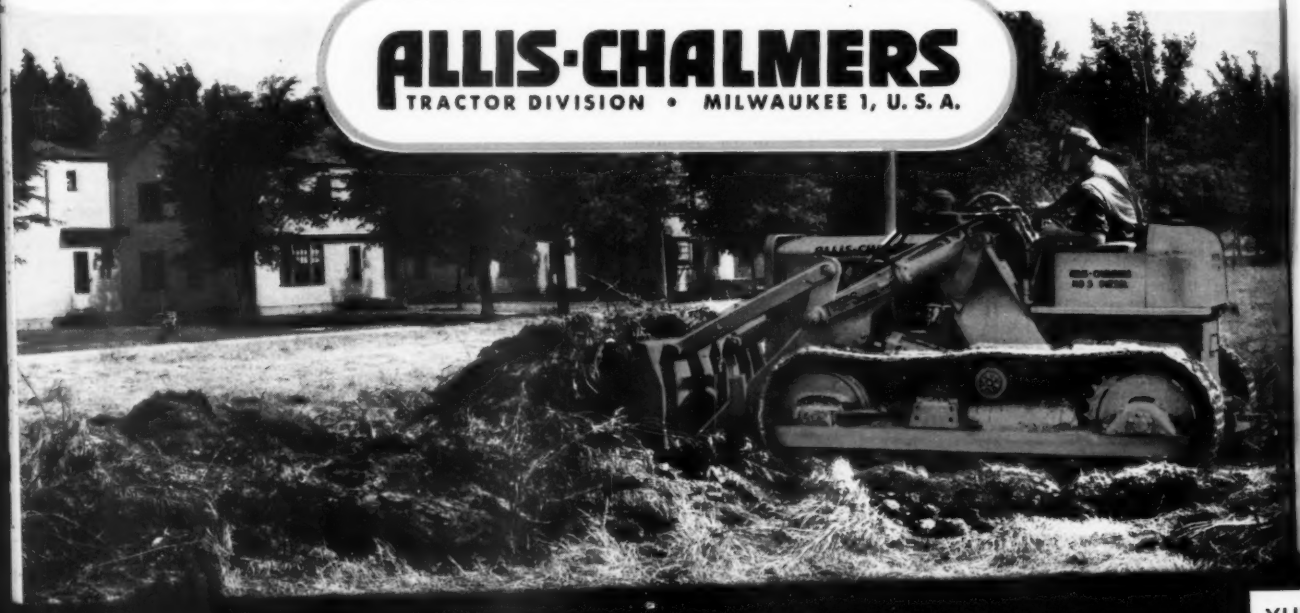


Airports and Aviation

How To Get a Surplus Airport

BEFORE a city can get any "apparently unused" military airports, it must await a ruling from the War and Navy departments on whether the airport actually is surplus. The War and Navy departments are required to keep local senators and congressmen fully informed on this point.

When taking over an airport, in most cases, a city must accept the "complete unit" and not just a portion. The War Assets Administration, which has charge of disposing of these properties, tries to transfer complete operating units whenever possible.

If the airport fits into the scheme of national defense or the promotion of national transportation, a city can get the airport without a cash payment, if it accepts the following conditions:

- The airport shall be operated and used for public airport purposes without unjust discrimination.
- The airport shall be maintained at all times in serviceable condition in order to insure its efficient operation.
- The transferee shall, insofar as it is within its power, prevent the creation of any hazard on or off the airport property which would limit its usefulness as an airport.
- The transferee shall construct no improvements that will interfere with its efficient operation.
- The government shall at all times have the right to the use of 25% of the capacity of the landing area for itinerant government aircraft, without charge.
- During an emergency declared by the President or Congress, the government shall have the right, without charge, to full possession and use.

In order to determine what constitutes an "operating unit" of an airport, the WAA has established these general principles:

- Facilities which are required to accommodate existing air traffic or to attract, promote, or create potential air traffic in the reasonably foreseeable future.
- Facilities which will be used in connection with the airport to accommodate normal "aviation activities" and which will contribute to the operation, maintenance, enlargement, improvement, or development of the airport.

This would rule out such portions of the properties as hotels, hospitals, cantonment areas, mess halls, barracks, and industrial plants. Restaurant facilities will be limited to those normally required by patrons and employes.

The unit will include hangars, shops, and, in exceptional cases, railroad facilities. Sweepers, rollers, mowers, concrete mixers, asphalt kettles, air compressors, rakes, dump trucks, tractors, jeeps, fire trucks, and crash trucks also can be included. Machine tools will not be transferred without cost. Every effort will be made to make the tools available to the potential transferee.

Office equipment will not include typewriters, adding machines, comptometers, and similar equipment, but will be limited to desks, chairs, filing cabinets, tables, hat racks, and similar furniture. Air conditioning equipment will be considered necessary only where it has been installed in control towers, or where its installation makes it definitely a part of the building.

To get an airport, the city contacts the appropriate regional office of the WAA where application forms and information are available. The regional office notifies the community of the application acceptance.

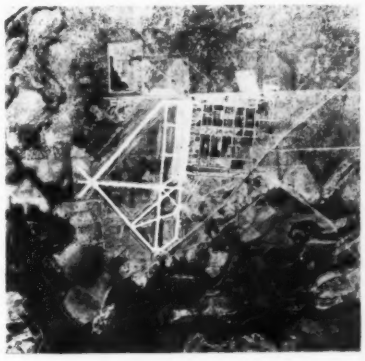
How San Angelo's Municipal Airport Becomes Self-Supporting

THIS has been a good year for the municipal airport at San Angelo, Texas; with more than a $3,000 operating deficit last year, the $7,000,000 port expects to crawl out of the red column this year and into the black, according to Manager Dennis Humphreys. Mr. Humphreys says that he believes the transfer from red ink to black is the result of doing all of the maintenance with airport personnel. At the port's disposal, left by the government, are the tools with which to work—a motorized grader, an asphalt spreader, a roller, grass cutters and rakes, street sweepers, and several other pieces of equipment.

The airport has been showing an increase in profit for each month of operation, Humphreys said, citing a typical month as follows: gasoline profit, $300; oil profit, $25; storage, $200; airline landing fees, $350; lease airline terminal, $39.58; lease operators, $607.04.

Expenditures for the above month were: salaries, $875; electricity, phone bill, toilet articles, hardware, paint, etc., $100. This shows a profit of $546.62.

Eight landings per day by Pioneer, plus terminal rental, comes to $242.50 per month, two by Trans-Texas Airways equals $75.00, and four by Continental, plus terminal lease, amount to $147.08, based on landings at the rate of $50 for the first scheduled landing, and $25 for each additional landing. Slick Airways soon may be landing cargo ships at the field. The field does not accrue as much revenue from gasoline and oil as might be possible, however, since the municipal airport does not service the airline ships. There are no restaurants or concessions to add to the revenue.



During the war, the San Angelo airfield served as a bombardier school.

Six steady employes are on the staff under the direction of Humphreys, answerable to Sam Lawhon, City Manager.

To maintain the airport in good flying condition Manager Humphreys uses a well selected variety of equipment. Two Roseman 7-gang mowers and two Worthington 9-gang mowers pulled by J. I. Case tractors keep the turf in good condition. Runways, roadways, taxiways, and other areas are maintained by a Caterpillar Tandem motor patrol and an Adams pull-type grader. A Littleford 320-gallon asphalt distributor maintains the asphalt surfacing. Two sweepers, one a Grace pull-type and the other a motorized Austin Western, keep the runways and taxiways clean. Two wheel-type carbon dioxide fire extinguishers furnish emergency fire protection and supplement fire fighting equipment from the San Angelo fire department.

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Marfak is tops for bearings in truck chassis, tractors, bulldozers, shovels and other equipment — a tough, tireless lubricant that gives *longer lasting* protection because it prevents rust and seals out dirt and moisture. Saves you money on maintenance costs.

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For engines — heavy-duty gasoline and Diesel — *Texaco Ursa Oil X★★* assures top efficiency and economy. *Ursa Oil X★★* is fully detergent . . . dispersive . . . highly resistant to oxidation. It keeps engines clean.

Save time and money by using the Texaco Simplified Lubrication Plan. For full details, call the nearest of the more than 2500 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

MAKE THIS SIMPLE TEST: Put a little *Marfak* in the palm of your hand. Rub it with a circular motion and notice how it liquefies to a fine oiliness under friction while retaining its original tough consistency in the surrounding "collar." Just so, in a bearing, *Marfak* lubricates wearing surfaces, while its "collar" seals out destructive dirt and moisture, assuring longer bearing life.

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Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write direct to the manufacturers, or circle the identifying numbers on his coupon and mail it to The American City Magazine, 470 Fourth Ave., New York 16. We will see that catalogs are sent to you without expense or obligation.

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Free Fire Hose Reports

163 The Bi-Lateral Fire Hose Co., 20 N. Wacker Drive, Chicago 6, Ill., will send to fire department officials pads of 50 fire-hose reports or fire-hose record cards (5" x 8½"). The forms are valuable for keeping an exact comparative record of fire-hose performance.

Cut Grass and Brush Around Municipal Plants

164 The Jari power scythe is light enough for one man to load and unload from a truck or car trunk; it is capable of cutting tall grass, weeds, and brush. Because it is easy to handle on uneven ground or steep slopes, and can cut close to buildings, it is particularly useful for water works, sewage plants, parks, and airports. For a descriptive folder, write Jari Products, Inc., 2934-G Pillsbury Ave., Minneapolis 8, Minn.

Metal Protective Coatings

165 A new 12-page catalog giving complete details on the chemical and physical properties, application instructions, and other pertinent data on protective coatings for metals is now available upon inquiry to the Amercoat Div., American Pipe and Construction Co., P. O. Box 3428, Terminal Annex, Los Angeles 54, Calif.

Refuse Collection Without Refuse Cans

166 The Brooks Load Lugger eliminates the necessity for garbage cans; the hydraulic hoist, which may be installed on any standard truck chassis, works with 5 to 10 detachable truck bodies or water-tight, enclosed "containers." For a catalog, write Brooks Equipment & Mfg. Co., 1950 Davenport Rd., Knoxville, Tenn.

Valves and Primers

167 The Valve and Primer Corp., 30 W. Washington St., Chicago 2, Ill., manufactures Apco-V-Apco primers, automatic power or tank primers, and air release valves for filter pipe, distribution, and other lines. For details, write the company.

Traffic Lines

168 The Kelly-Creswell Co., Xenia, Ohio, manufactures zone markers that contain Air Curtains, so that clean-cut lines may be drawn with nothing but the brush coming in contact with the paving. The striping guns are by DeVilbiss.

Automatic Resuscitators For Emergency Squads

169 The Emerson resuscitator is an essential unit for fire, police, and rescue squads, first aid units, and public beaches. Automatic, this mechanism is easily portable and thoroughly dependable. For a bulletin, write the J. H. Emerson Co., 22 Cottage Park Ave., Cambridge, Mass.

Valve Boxes

170 The Lee Hydraulic Co., Troy, N. Y., will send you details concerning its line of valve boxes, which are fabricated from steel with cast-iron covers and have a heavy corrosion-proof coating.

Two-Yard Bulldozer-Shovel Has Tip-Back Bucket

171 The Hough Bulldozer shovel, which has tracks that oscillate freely, carries its load without spillage as the result of a tip-back bucket that shifts automatically in carrying position. For information about the machine, write The Frank G. Hough Co., 710 Sunnyside Ave., Libertyville, Ill.

Taste and Odor Control In Water Purification

172 Industrial Chemical Sales, Division West Virginia Pulp & Paper Co., 230 Park Ave., New York 17, N. Y., manufacturers of Aqua Nuchar activated carbon, has published a 164-page booklet entitled *Taste and Odor Control in Water Purification*. The booklet does not confine itself solely to the use of activated carbon, but discusses all the usual methods of taste and odor control, giving detailed explanations of superchlorination and ozonation.

Hydrants and Water Fountains

173 The Murdock Mfg. & Supply Co., Cincinnati 2, Ohio, will send you information about its line of outdoor drinking fountains and hydrants—anti-freezing, compression, and self-closing. On Murdock equipment, washers may be replaced without digging up the fountain.

Stopping Leaks in Pipe Lines

174 The M. B. Skinner Co., South Bend 21, Ind., will send you data on its line of emergency pipe clamps for stopping leaks in pipe lines. By utilizing pipe clamps, the municipality is saved the expense of tearing out old, and inserting new pipe.

Leak Detectors with Automatic Shut-Off

175 The circuits on all Goldak electronic pipe and metal locators and leak detectors shut off automatically when the machines are not in use—no chance of the apparatus wearing itself out in the storeroom. Another economical and efficient feature is the use of miniature tubes exclusively. The Goldak Co., 1544 West Glenoaks Blvd., Glendale 1, Calif., will send illustrated printed matter.

Low Loading Height Economizes On Refuse Collection Cost

176 One of the outstanding features of the Leach Refuse-Getter is its low loading height, resulting in minimum lift by the operator, less fatigue, and greater speed and efficiency. For data, write the Leach Co., Oshkosh, Wis.

2½- To 3-Hp Engine

177 Data about the Clinton Machine Co.'s (Clinton, Mich.) new 2½- to 3-hp, 4-cycle, air-cooled gasoline engine, may be obtained from the company. Also available is information about Clinton's 1½- to 2-hp gasoline engines.

Traffic Officers Shine At Night

178 The American Cord & Webbing Co., Inc., 374 Broadway, New York 13, N. Y., will send you information, samples, and price lists of its luminous and reflector safety patrol belt—a shoulder strap and belt that shines in the dark without electricity or wires, for use by traffic officers.

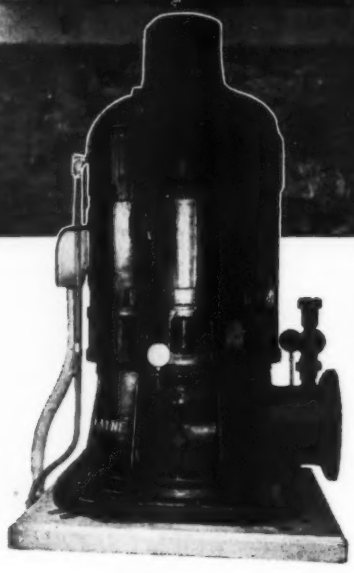
Refuse Disposal Body Holds 20 Yards of Wrapped Garbage

179 The Heil Colecto-Pak, with a 10-yard body, can hold 20 yards of wrapped garbage, since the mechanism compresses as it is being loaded. For information about other features of this low-loading, water-tight refuse disposal body, write The Heil Co., Milwaukee 1, Wis.

Conditioning Coagulant

180 Ferri-Floc, a partially hydrated ferric sulphate which does not pass through a gummy stage when going into solution, may be used for the conditioning of water, sewage, industrial waste, and sludge. Write The Tennessee Corp., Atlanta, Ga.

(*Continued on Page* 23)



6,000,000 GALLONS DAILY

From Layne Water Supply Unit Installed for Janesville, Wis.

Janesville is a mighty lucky city. Their newly installed Layne Water Supply Unit is producing over 6,000,000 gallons daily with enough water on reserve for 16,000,000 gallons daily from the same well. The draw-down beyond the six-million gallons daily is almost negligible. Such a record is greatly attributed to the soundness of Layne's fine engineering and splendid installation methods.

pumps

For wells, lakes, rivers, reservoirs, irrigation—or for any use where large quantities of water must be produced at low cost. Sizes range from 40 to 16,000 gallons per minute. Write for Layne Pump Catalog.

Every Layne Well Water Supply Unit is designed and built to produce the absolute maximum amount of water at a minimum of cost. Many installations exceed the Layne guarantee, thus richly rewarding the buyer for his confidence in the Layne Organization and their proven methods.

If your city, factory, processing plant, railroad or irrigation project needs more water Layne Engineers will gladly provide dependable water development recommendation. No obligation. For literature, address

LAYNE & BOWLER, INC.
General Offices, Memphis 8, Tennessee

LAYNE WELL WATER SYSTEMS
vertical turbine pumps

AFFILIATED COMPANIES—Layne-Arkansas Co., Stuttgart, Ark. ★ Layne-Atlantic Co., Norfolk, Va. ★ Layne-Central Co., Memphis, Tenn. Layne-Northern Co., Mishawaka, Ind. ★ Layne-Louisiana Co., Lake Charles, La. ★ Louisiana Well Co., Monroe, La. ★ Layne-New York Co., New York City ★ Layne-Northwest Co., Milwaukee, Wis. ★ Layne-Ohio Co., Columbus, Ohio ★ Layne-Pacific, Inc., Seattle, Wash. ★ Layne-Texas Co., Houston, Texas ★ Layne-Western Co., Kansas City ★ Layne-Western Co. of Minn., Minneapolis, Minn. ★ International Water Supply, Ltd., London, Ontario, Canada ★ Layne-Hispano Americana, S. A., Mexico, D. F.

Stop—Check and Mail

Use Coupon on Page 21

(Continued from Page 21)

pH and Chlorine Control

181 The eighth edition of the W. A. Taylor & Company's manual, *Modern pH and Chlorine Control*, may be obtained by writing to the company at 7300 York Rd., Baltimore 4, Md. The booklet includes an explanation of the term pH control, descriptions of various types of comparators and colorimeters, and discussions of the Midget Dalite lamp, titrator, dialyzer, crystalline and solution indicators, buffers, meters, and a section devoted to theory and suggested procedures.

Running Government Bureaus Efficiently

182 *Systems for Government Administration* is a free quarterly publication which may be obtained by government officials from the Government Systems and Methods Research Department, Systems Div., Remington Rand, 315 Fourth Ave., New York 10, N. Y. These publications describe various methods of record-keeping, with case histories.

Street Sweeper Carrier With Dumping Scoop

183 The Street Sweeper's Friend, No. 17S, manufactured by the Tarrant Mfg. Co., Saratoga Springs, N. Y., is a Tarco can carrier that is equipped with a dumping scoop —a shovel-like attachment at the front which is swung around to dump refuse into the can on the platform. Illustrated literature is available.

Electric Photometer Takes the "Guess" Out of Water Analysis

184 The Klett Summerson electric photometer can be used for any determination in which color or turbidity can be developed in proportion to the substance to be determined in the analysis of water. It is particularly useful in accurately determining chlorine residuals in the "breakpoint" process. For information, write the Klett Mfg. Co., 179 E. 87th St., New York, N. Y.

Cut Street Maintenance Costs With This Mixer

185 The Kwik-Mix bituminous mixer has the end-discharge feature, which makes it possible to pour the mix directly into the patch being repaired. The non-tilting discharge saves hours by eliminating operator fatigue. Write to the Kwik-Mix Co., Port Washington, Wis., for further information.

Main Locator

186 The Wilkinson Line Locator has a rigid handle between the two units that assures positive loop balancing in the location of mains, services, stubs, and similar underground equipment. A circular will be sent on request by the Wilkinson Products Co., P. O. Box 1774, Wilshire-LaBrea Sta., Los Angeles 36, Calif.

Air-cooled, 4-Cycle Engines

187 Briggs & Stratton Corp., Milwaukee 1, Wis., will send you information on its line of 4-cycle, air-cooled gasoline engines for various municipal uses.

New Model Leak Detector

188 The Allen-Howe Electronic Corp., Peabody, Mass., has put out a new model of its leak detector for detecting and locating escaping water, steam, and gas. A catalog describing this brass-and-plastic instrument is available.

Remove Iron and Manganese From Water Supplies

189 Walker Process Equipment, Inc., Aurora, Ill., has a series of brochures describing its processes of water purification. Prominent among those and particularly well documented is Bulletin 1SI, discussing the removal of iron and manganese by contact aeration and filtration through anthracite media.

Parking Meters

190 If your municipality is contemplating the purchase of parking meters either to augment the present supply or as a new means of obtaining revenue, you may be interested in obtaining information from Mi-Co Meters, Division of The Michaels Art Bronze Co., 231 Court St., Covington, Ky.

Supercharged Dual-Fuel Diesel Gives Economy of Fuel

191 By supercharging a dual-fuel diesel, the energy of the engine exhaust is used to drive a blower which in turn supercharges the engine. An increase of hp is thus obtained, as well as an appreciable reduction in fuel consumption while increasing mechanical efficiency and scavenging. Additional information may be obtained from the Worthington Pump & Machinery Corp., Engine Div., Buffalo, N. Y.

Fire Apparatus

192 For information about its complete line of fire trucks, with styles suitable for large or small communities, write to the Mack Mfg. Corp., Fire Apparatus Div., Long Island City 1, New York, N. Y.

Automatic Voting Machines Result in Economy

193 Automatic voting machines—since they make possible the consolidations of voting precincts, require fewer officials and clerks, and eliminate paper ballots and recounts—offer a decided economy in election expenses. Information may be obtained from the Automatic Voting Machine Corp., Jamestown 55, N. Y.

These Manometers Are Easy to Read

194 Simplex Type MAP Manometer for liquid readings in sewage and water treatment plants has large-diameter gage glasses that tend to produce a flattened meniscus and easy readings. It also has a scale that permits deflection readings of 1/100 of an inch. An equalizing valve enables checking and testing the Manometer in place. Write for Bulletin 200, Simplex Valve & Meter Co., 6789 Upland St., Philadelphia 42, Pa.

Water, Gas, Sewer Pipe Line Equipment

195 Joseph G. Pollard Co., Inc., 141 Ashland Place, Brooklyn, N. Y., has issued a catalog, No. 24, which describes the mechanisms manufactured by the company for maintenance and construction of pipe lines: melting furnaces and torches, pouring pots, dippers, pails, derricks, tools, joint runners, pipe cutters, hydrant testers, thawers, sewer cleaning machines, and similar equipment.

Diesel Engines

196 Write for bulletins describing diesels available in unit capacities of 100 to 1,250 kva, 50 and 60 cycles. They are manufactured by A. G. Schoonmaker Co., Inc., 50 Church St., New York 7, N. Y.

A Convertible Roller

197 The Littleford Trail-O-Roller, with compaction equal to a 5-ton tandem, is converted from rolling to traveling in two minutes, and can be trailed as rapidly as a truck is driven. This equipment is best suited for small patch jobs, so important in preventing major street deterioration. For information, write Littleford Bros., Inc., 500 E. Pearl St., Cincinnati 2, Ohio.

Mowing At 20 Miles Per Hour

198 The Worthington Park Ranger will mow a 7-foot-wide swath of grass at 20 mph. One of the important features is a close cut to obstructions. Off the job, the Ranger may be transported at 45 mph, cutting down on time lost between jobs. For information, write Worthington Mower Co., Stroudsburg, Pa., subsidiary of Jacobsen Mfg. Co., Racine, Wis.

"Tips" on Good Construction For Sewer Pipe Inspectors

199 This folder, interesting to sewer-pipe inspectors, contains information which is an essential element in the maintenance of serviceability of sewer and storm drain construction. Written by Myron T. Jones, consulting engineer of Columbus, Ohio, the material may be obtained by writing to the Clay Sewer Pipe Assn., Inc., 1105 Huntington Bank Bldg., Columbus 15, Ohio.

Sand Filter Cleans Self As It Filters

200 The Hardinge automatic backwash rapid sand filter, for the treatment of raw water, requires no shut-down for cleaning: the automatic traveling backwash mechanism cleans the filter bed, a section at a time, during operation. For Bulletin No. 46, write the Hardinge Co., Inc., 240 Arch St., York, Pa.

Pumps for Water Supply

201 If your community is faced with the selection of a pump for water supply, you may be interested in investigating the products of Wintroath Pumps, Inc., 1100 South Meridian Ave., Alhambra, Calif. Write for detailed information.

How to Give New Life To Old Concrete

202 Guniting is a method of repairing eroded and disintegrated concrete structures. By this method, structures which otherwise might require an expensive rebuilding job may be completely rehabilitated at a comparatively low cost. Bulletin D2300 gives all the details; write the Cement Gun Co., Allentown, Pa.

Paving Breaker Frees Holes of Cuttings

203 The Gardner-Denver S55 sinker automatically cleans holes of its cuttings as it drills. Four-pawl, rifle-bar rotation gives it high drilling capacity. For details of its operation, or information about other paving breakers, write the Gardner-Denver Co., Quincy, Ill.

Cement-Mortar Linings Boost Water Main Flows

204 *The Centriline Process* is the title of a new brochure issued by the Centriline Corp., 140 Cedar St., New York 6, N. Y.; it describes the company's method of centrifugal application of cement-mortar linings for water mains.

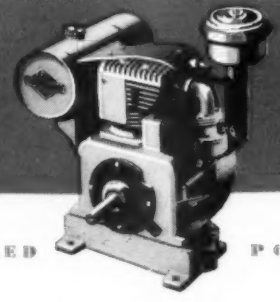
(*Continued on Page 24*)

4 CYCLE
BRIGGS & STRATTON
GASOLINE ENGINES

RECOGNIZED THE WORLD OVER FOR

ADVANCED ENGINEERING

IN AIR-COOLED GASOLINE ENGINES



AIR-COOLED POWER . . .

The trade-mark on a Briggs & Stratton engine is recognized as a *seal of proved performance.* Every step in the manufacture of Briggs & Stratton engines is based on the experience and technical knowledge gained during the 28 years of *continuous production.* Advanced engineering and refinements keep Briggs & Stratton out in front . . . years ahead . . . in every phase of engine building — as evidenced by the record established by more than 3 MILLION of them in operation in all parts of the world.

Preferred Power FOR INDUSTRIAL CONSTRUCTION RAILROAD AND FARM EQUIPMENT

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U. S. A.

Check and Mail

Use Coupon on Page 21

(*Continued from Page* 23)

Ozonation Improves Palatability

205 Ozonation of water reduces offensive tastes and odors caused by industrial pollution, algae, and decayed vegetation, and leaves neither odor nor tastes of its own. For information, write the Ozone Processes Div., The Welsbach Corp., 1500 Walnut St., Philadelphia 2, Pa.

Barrel on Hydrant Contains All Working Parts

206 On the Mathews hydrant, the barrel, which is removable, contains all the working parts; all repairs are done aboveground, or a substitution of barrels may be made so that the hydrant is always ready for use. Information may be obtained by writing to the R. D. Wood Co., Public Ledger Bldg., Independence Square, Philadelphia 5, Pa.

Heavy-Duty Motor Trucks With Positive Control

207 The Four Wheel Drive principle of heavy-duty trucks is that of giving added control through the pulling power and traction of four driving wheels. Details of this principle may be obtained from The Four Wheel Drive Auto Co., Clintonville, Wis.

Taking Street Lighting Out of the Dark

208 Modern street lighting takes the shadows out of streets, and the result is an obvious reduction in vehicular accidents. Properly designed street lighting standards can make all the difference between effective and ineffective lighting. For information about Union Metal's steel lighting standards, write The Union Metal Mfg. Co., Canton 5, Ohio.

Pipe-Lining Investment Pays Dividends

209 Pipes which have been processed with Preload Pipe Lining are potentially capable of delivering greater capacities of water Increased earning power can, within a short time, completely pay for the cost of the lining. For data, write The Preload Companies, 420 Lexington Ave., New York, N. Y.

Salt Removes Snow and Ice Quickly

210 The use of salt for the removal of ice and snow from streets has the great advantage of leaving no residual to be removed from gutters or sewers. Information about Sterling Augur-Action rock salt may be obtained by writing to the International Salt Co., Inc., Scranton, Pa.

Multi-port Check Valves Prevent Water Hammer

211 The Smith Multi-port, disk check valve permits aqueduct flow to continue, at a gradually diminishing rate, even after pumps are suddenly stopped, thus preventing the risk of water hammer. For details, write the A. P. Smith Mfg. Co., East Orange, N. J.

Combine Several Operations In Water Treatment

212 The Accelator combines quick mixing, coagulating, settling, and sludge removal in a single unit. The result is an appreciable saving in space, construction costs, and processing time. Send for Accelator Bulletin 1824, Infilco, Inc., 325 West 25th Place, Chicago 16, Ill.

Stop—Check and Mail

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Valves, Hydrants, Waterworks Accessories

213 M & H Valve and Fittings Co., Anniston, Ala., has a line of products that includes pipe line accessories, valves and hydrants, and fittings. Write for Catalog No. 34.

An All-Season Spreader

214 The Model E Ice Control Unit works for you on a year-round basis. It is useful in the winter for spreading sand and cinders; during the summer, for dust control with calcium chloride, and all year round for sealcoat work, patch spreading, and general road and shoulder maintenance. Details and literature are available from the Highway Equipment Co., Inc., 629 D Avenue N. W., Cedar Rapids, Iowa.

Diesel Power Works For Health and Sanitation

215 *Maintaining Health and Sanitation Standards with "Caterpillar" Diesel Power* is the title of an 8-page booklet that depicts the part played by Caterpillar diesel machines in garbage and sewage disposal, water supply and purification, and disease-pest extermination. For a copy, write for Form 10362, the Caterpillar Tractor Co., Peoria 8, Ill.

Post-War Cabs on Trucks

216 Among the post-war innovations on the cabs of GMC trucks are an increase of rear-window vision, a 20% increase of windshield vision, ball bearing steering, easier clutch pedal action, a new ventilating system, and increased comfort for the driver. Write to the GMC Truck & Coach Division, General Motors Corp., Detroit, Mich.

How Chemicals Fit Water Treatment

217 A new technical bulletin on the role that alkalies and chlorine play in the treatment of water is being offered by the Solvay Sales Corp., Advertising and Sales Promotion Dept., 40 Rector St., New York 6, N. Y. The 94-page booklet has sections on softening, purification, taste and odor removal, corrosion control, boiler feed water treatment, and lists of standard reference works on the subjects covered.

Snow Loader Handles 15 Cubic Yards Per Minute

218 The Haiss snow loader, which digs and conveys packed snow, can handle up to 15 cubic yards per minute. Particularly useful for hard and frozen snow because it digs upward as it loads, the loader may also be used effectively on light snow. Write for further information to the George Haiss Mfg. Co., 140th St. & Park Ave., New York 51, N. Y.

Hot or Cold Weather Should Not Faze a Meter

219 One of the important requisites of a water meter is its ability to withstand extreme variations of temperature, reducing the percentage of breakdown due to expansion or contraction. For information on how the Hersey meter performs this function, write the Hersey Mfg. Co., South Boston, Mass.

Save Time in Municipal Billing

220 The Sundstrand may be used for billing of one or more municipal services, tax billing, and budgetary accounting simultaneously, eliminating laborious hand work, and saving time. For particulars, write the Underwood Corp., One Park Ave., New York 16, N. Y.

Sewage Dewatering and Drying Equipment

221 The General American Transportation Corp., 10 E. 49th St., Dept. 830b, New York 17, N. Y., manufactures dewatering and drying equipment that is designed to cope with overloads and unusual operating requirements. Write for information about the company's line of products.

Have You Investigated Ground Water Supplies?

222 Would you like a water supply that is cool, consistent in character, reliable in quantity, and requiring the very minimum in treatment? Ranney Method Water Supplies, Inc., 63 S. High St., Columbus, Ohio, will help you find and develop such a supply, utilizing horizontal infiltration collectors that draw from accurately analyzed water-bearing formations. Many cities and industries are using this method of water extraction successfully.

Is Lighting Your Problem?

223 The Philadelphia Electrical & Mfg. Co., 1200-36 N. 31st St., Philadelphia 21, Pa., has issued a catalog, No. 90, which answers the questions you may have about street and highway lighting equipment, service station lighting, and flood and fluorescent lighting; 200 pages, illustrated, and containing engineering hints.

Wire Fence Keeps Vandals Out

224 Wire fence around municipal projects protects property from vandals as well as preventing accidents from carelessness. A 32-page booklet describes the various types and weights of Cyclone Chain Link fence available; write to the Cyclone Fence Div., American Steel & Wire Co., Waukegan, Ill.

How Much Is Air Costing You?

225 The Jaeger compressor, with force feed lubrication, 800 fpm piston speed, delivering air within 100 degrees of atmosphere temperature, operates at a comparatively low cost. For details write the Jaeger Machine Co., Columbus 16, Ohio.

Rustproof Pipe with High-flow Capacity

226 Because it is resistant to corrosive soils and eroding material, Transite pipe has a high-flow capacity which is not reduced by tuberculation. Ask for brochure TR-11A, Johns-Manville, Box 290, New York 16, N. Y.

Underground Pipe Pusher

227 Installing pipe under streets, railways, and other obstacles is not too difficult if extensive ditching and repaving are eliminated. The Greenlee hydraulic pipe pusher requires only a short trench, cutting the job to a fraction of the time that might otherwise be required. For the facts, write the Greenlee Tool Co., Division of Greenlee Bros. & Co., 2030 Columbia Ave., Rockford, Ill.

Do Your Citizens and Industries Want Soft Water?

228 Soft water is greatly appreciated by private citizens, and sometimes absolutely required by industries. You may be interested in investigating the processes engineered by The Permutit Co., Dept. A10, 330 West 42nd St., New York 18, N. Y.

Equipment For Municipal Maintenance

229 Gar Wood Industries, Inc., Wayne, Mich., manufactures a multitude of equipment that may be used for various municipal maintenance and construction departments: the Load Packer and Bucket Loader for refuse collection; hydraulic hoists and dump bodies, truck cranes, and winches for trucks or tractors; ditchers, power shovels which are convertible to cranes, draglines, and back hoes; finegraders and material spreaders. For data, write the company.

Rollers for Close-In Work

230 The Pierce Baby Bear roller is designed for small area maintenance and close work. Working against a curb up to 25 inches high and within 1½ inches of a higher wall or building, this 2½- to 3-ton roller contains the final drive within the rear roll. A folder is obtainable from the Lewis Mfg. Co., 415-431 Hoefgen Ave., San Antonio 6, Texas.

Resuscitators Important For Fire Departments

231 Almost as important a piece of fire-fighting equipment as the fire hose is the resuscitator in the reduction of death from asphyxiation. Available with the Goodner Model resuscitator is a midget attachment which permits resuscitation of two patients simultaneously or of patients in places difficult to reach, such as on the top of a building, or in a cave-in. For details, write the Stephenson Corp., Red Bank, N. J.

Where to Use Alum

232 Aluminum sulfate has been found equally effective for coagulation in water and sewage plants. In water works, it removes turbidity, color, and bacteria. Its advantages in sewage plants include a resultant cut-down of chlorine consumption, and ready adaptability for either dry or solution feeding. For additional information, write the General Chemical Co., 40 Rector St., New York 6, N. Y.

Fencing Protects Municipal Services

233 One of the most important usages of Non-Climbable chain link wire fence, manufactured by The Stewart Iron Works Co., Inc., 1421 Stewart Block, Cincinnati 1, Ohio, is in protecting municipal reservoirs. Other products manufactured by this company include wire window guards, wire mesh partitions, and steel folding gates. Specify your particular interest when writing for information.

Low-Cost Fire Fighting Unit

234 The Porto-Pumper is a low-cost unit consisting of a trailer mounted on two independently sprung rubber-tired wheels, a gasoline-driven high-pressure utility pump; 50 feet of supply hose; 200 feet of fire hose; an 18-foot, three section extension ladder; fire axe, and a hand-type fire extinguisher. The unit may easily be attached to a truck, automobile, or jeep. Literature is available upon request from Porto-Pump, Inc., 227 Iron St., Detroit 7, Mich.

Electric-Driven Dredge For Cleaning Reservoirs

235 The Morris hydraulic dredge handles material at a total cost of less than 10 cents per cubic yard. Excavating silt, sand, clay, and gravel from a maximum depth of 100 feet below the water surface, this machine digs and transports material in a single operation. Bulletin 177 gives the story; available from the Morris Machine Works, Baldwinsville, N. Y.

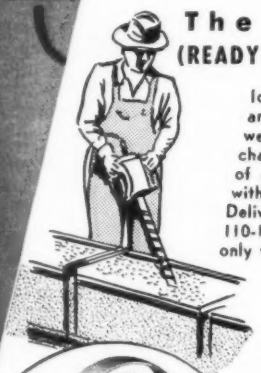
(*Continued on Page 26*)

CONCRETE VIBRATION *is Our Meat!*

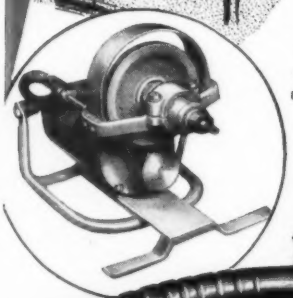
If you are looking for the best solution to any specific concrete vibration problem, or on the other hand, you simply want the best vibrator your money will buy, see the nearest JACKSON Distributor or drop us a line. Concrete Vibration is our meat!

For over 25 years we have specialized in the development and manufacture of the most efficient and reliable concrete vibrators for each and every type of concrete construction. And the record of JACKSON equipment in the field clearly demonstrates that that goal has been fully attained. The name "JACKSON" on any vibrator is complete assurance of thorough satisfaction.

The FS-7A ELECTRIC (READY FOR IMMEDIATE DELIVERY)



Ideal on many types of construction. Built around the lightest, yet most powerful motor we have ever used on equipment of this character. Easy to handle or skid. Takes any of our standard heads up to 2⅜" x 18½" with flexible shafting in 24' to 14' lengths. Delivers up to 10,000 V.P.M. on AC or DC 110-120 Volt. Does many jobs formerly done only with larger machines.



Left: The FS-7A with reduction attachment to provide the most desirable shaft speed for wet or dry rubbing or grinding of concrete.

JACKSON INTERNAL—EXTERNAL ELECTRIC-FLEXIBLE SHAFT-HYDRAULIC Concrete VIBRATORS

ELECTRIC TAMPER & EQUIPMENT CO.
LUDINGTON MICHIGAN

Check and Mail

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(Continued from Page 25)

Keep Tanks Rust-Free

236 The Rusta Restor cathodic method of protection against rusting eliminates the necessity of interior painting by maintaining the tank in a neutralized state so that rust cannot occur. For details, write Rusta Restor Division, The Johnston & Jennings Co., 861 Addison Rd., Cleveland 14, Ohio.

Is Your Municipality Buried Under 6 Feet of Snow?

237 Bulletin No. 48, distributed by the Balderson Mfg. Co., Wamego, Kans., illustrates several efficient methods of getting out from under a snowfall. Described are V-Type tractor plows, with and without wings; reversible tractor plows; motor grader and truck plows, and sidewalk plows.

Chlorine for Water, Sewage Treatment

238 Pittchlor, a high-test calcium hypochlorite with 70% available chlorine, may be used for the chlorination of water supplies and for sewage treatment. For literature covering the use of chlorine in your particular field, write Columbia Chemical Division, Pittsburgh Plate Glass Co., Fifth Ave. at Bellefield, Pittsburgh 13, Pa.

Automatic Control Of Street Lighting

239 The Sunswitch automatically switches street lighting units on and off by means of a photoelectric cell operating according to the foot-candle value of daylight. Since street lighting may then be operated from secondary circuits, an appreciable saving is effected. For full information, write the Ripley Co., Inc., 11 W. 42nd St., New York 18, N. Y.

Automatic Fire Alarm Signals Within Seconds of Fire

240 The Vigilarm system works on the Rate-of-Rise theory—an alarm is given within seconds of a sustained rise in temperature. For details, write The Gamewell Co., Newton Upper Falls 64, Mass.

Compressors for Sewage Plant Service

241 The De Laval Steam Turbine Co., Trenton 2, N. J., will contribute years of engineering experience in helping officials in the determination of compressor requirements for sewage plant treatment. Write to the company for information.

Multi-Purpose Maintenance Machine

242 The Traxcavator may be used to dig and load sand and gravel; to rip up and load old pavements; to clean leaves from gutters, remove snow, and move dirt; to terrace, grade, level, and ditch; to remove trees, and to do a multitude of other jobs. For details and specifications, write Dept. AC-97, Trackson Co., Milwaukee 1, Wis.

Frost Bottom Meters Are Impervious to Weather

243 American and Niagara water meters are designed so that when ice forms in the meter and expansion takes place, the low cost frost bottom casting breaks, relieving pressure and allowing all working parts to move with the ice. Damage is thus limited to the frost bottom. By replacing the bottom on the spot, the meter is again ready for service. For details write the Buffalo Meter Co., 2902 Main St., Buffalo 14, N. Y.

(Continued on Page 28)

THE MI-CO PARKING METER

SIMPLICITY and RUGGEDNESS are outstanding characteristics

THIS METER

is well known for its SIMPLICITY of design and mechanism ... its Ease of Operation and Servicing ... its RUGGEDNESS to take the kind of treatment a parking meter must withstand ... for the protection it offers the city against loss of revenue. Written testimony of unbiased and nationally qualified engineers is available to substantiate these statements.

WHEN YOU BUY MI-CO METERS

YOU DON'T PAY A PREMIUM

FOR THESE IMPORTANT FEATURES

BEFORE YOU BUY

WRITE US ABOUT WRITTEN TESTIMONY MENTIONED ABOVE

MI-CO METERS, 231 Court St., Covington, Ky.

Division of THE MICHAELS ART BRONZE CO.

COLE TANKS

Cole elevated tanks are *correct* in design. Their simplicity contributes to their low cost of maintenance. Capacities 5,000 to 2,000,000 gallons — with hemispherical, ellipsoidal or conical bottoms. Also flat tanks for storage of butane and propane gas. Correctly built, in accordance with ASME specifications.

We invite your inquiries. A large and experienced engineering department is at your service. State capacity, height to bottom and location.

R.D. COLE MFG. CO. ESTABLISHED 1854
Newnan Ga.

Check and Mail

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Concrete Surface Repairs

244 *Gunite* is the title of a manual that combines in a single reference book the answers to concrete surface repair problems in the fields of water, sewerage, recreational buildings, and flumes and ditches. For a copy, write the Pressure Concrete Co., 193 Emmet St., Newark, N. J.

Reinforced Concrete Pipe

245 The Lock Joint Pipe Co., P. O. Box 269, East Orange, N. J., manufactures and installs reinforced concrete pressure pipe for water supply and distribution mains, and concrete pipe for sanitary sewers, storm drains, culverts and subaqueous lines.

Improved Equipment for Sewer Cleaning

246 Flexible Sewer-Rod Equipment Co., 9059 Venice Blvd., Los Angeles 34, Calif., has issued a new 36-page edition of its catalog of municipal sewer and pipe cleaning tools, including the Carry-All trailer and power-bucket machines. Included are working instructions.

Only One Moving Part In This Check Valve

247 The Chapman Tilting Disc check valve, containing only one moving part—the disc—is designed so that the balanced hinge-pinned disc works with the stream; the stream acts as a cushion and slamming, with the resultant pipe-line stresses, is prevented. A bulletin describing this check valve may be obtained by writing to The Chapman Valve Mfg. Co., Indian Orchard, Mass.

Coin Sorters and Counters

248 If too great a part of the revenue from municipal parking meters passes into a budget for the manual counting and sorting of the coins, you may be interested in receiving information from the Universal Business Equipment Co., 537 S. Dearborn St., Chicago 5, Ill., on its line of automatic coin counters and sorters.

Water Metering

249 Worthington-Gamon meters come in sizes of 2 to 8 inches to measure rates of liquid flow up to 2,800 gpm. Available in either current or velocity design, the meters have axial and radial hydraulic balance that assures accuracy. For details, write Worthington-Gamon Meter Co., 296 South St., Newark 5, N. J.

25 Tons of Bituminous Mix Per Hour

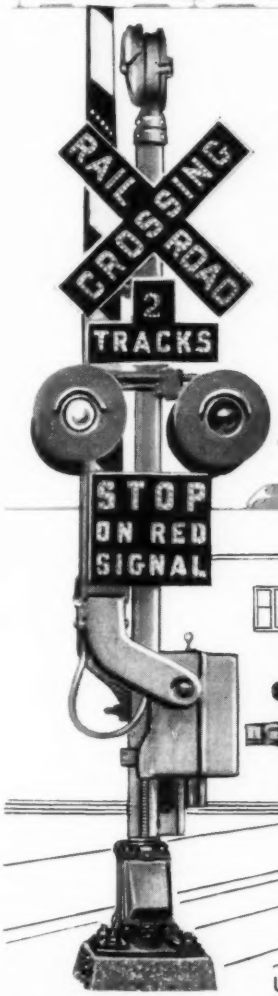
250 The Barber-Greene Maintenance Plant is a small bituminous mixing plant that is particularly effective in regular street maintenance and repair where a low capacity is required. This portable machine is capable, however, of producing a constant flow of up to 25 tons of mix per hour. Write to the Barber-Greene Co., 633 West Park Ave., Aurora, Ill., for the bulletin, *A Small Plant That Does a Big Job!*

Duronze Alloys Are Non-Rusting

251 Duronze alloys, made with a copper base, have been found an appreciable labor- and replacement-saving mechanism in water plants. For the 80-page Duronze Manual describing the various types of applications for Duronze alloys, write the Bridgeport Brass Co., Bridgeport 2, Conn.

There must be a reason . . . 80 RAILROADS use

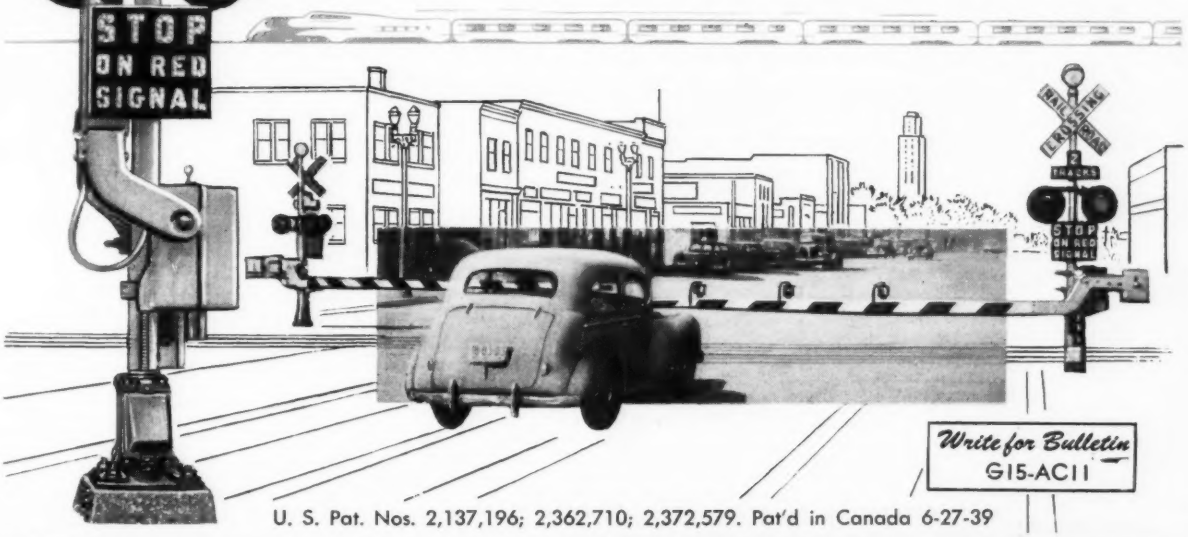
Model 10 HIGHWAY CROSSING SIGNALS



Model 10 Signals are the most thoroughly dependable grade crossing protection it is possible to buy. During their eleven years of service, Model 10's have proved their efficiency, establishing perfect performance records at thousands of railroad-highway crossings throughout the world. Since the first Model 10's were installed in June, 1936, NOT ONE FATALITY has ever occurred as the result of operation failure on the part of Model 10's. In recognition of their contribution to public safety, Model 10 Signals have been awarded the Certificate of Merit by the New York Museum of Science and Industry.

Model 10 Signals

- **Operate automatically — as dependably as semaphore signals.**
- **Safeguard against "second train" accidents.**
- **Permit the fast flow of rail and highway traffic.**



Write for Bulletin G15-AC11

U. S. Pat. Nos. 2,137,196; 2,362,710; 2,372,579. Pat'd in Canada 6-27-39

MODEL 10 HIGHWAY CROSSING SIGNALS ARE THE PRODUCT OF

WESTERN RAILROAD SUPPLY CO.

Designer and Manufacturer of Safety Devices for Railroads

2406-2436 SOUTH ASHLAND AVE.
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Foreign Representatives
GUITERMAN COMPANY, INC., 35 SOUTH WILLIAM ST., NEW YORK 4, N. Y. and LONDON
INTERNATIONAL STANDARD ELECTRIC CORP., 67 BROAD ST., NEW YORK 4, N. Y.

CERTIFICATE OF MERIT for Safety awarded to WESTERN RAILROAD SUPPLY CO. by the NEW YORK MUSEUM OF SCIENCE AND INDUSTRY

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FOR DEPENDABLE ENDURANCE

To survive the heat, cold and privations of a desolate land, the prospector depends on the sturdy, plodding endurance of his patient burro. On city streets the KARPARK Meter keeps steadily on the go, stoutly resisting the effects of the wind, snow, rain and heat. Built for strength in every part, its rugged accurate escapement is proof against moisture, corrosion and magnetism; its mighty standard stands firm under severe collisions. City officials, prospecting for effective traffic control, find that durable, dependable KARPARKS — with easy automatic operation, easy enforcement and easy low cost maintenance — bring trouble free order and system and a steady revenue that more than pays all cost. Be fully informed about KARPARKS. Write today!

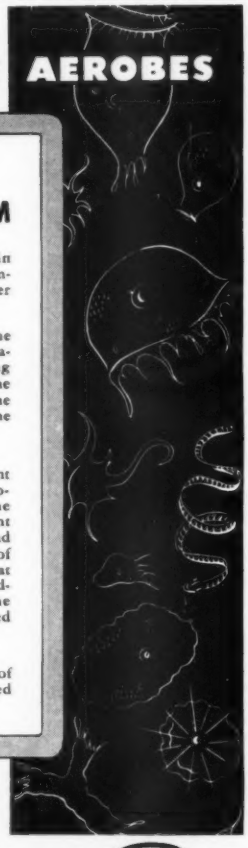
KARPARKS ARE MANUFACTURED BY THE HERSCHEDE HALL CLOCK CO.

THE WISE CHOICE

KARPARK *Automatics*

KARPARK CORPORATION, CINCINNATI 6, OHIO

MASS ACTION OF ACTIVE AEROBES



provided by

ACCELO* FILTER SYSTEM

The greater the number of active aerobes in a trickling filter, the faster and more complete is the reduction of the organic matter in sewage.

That is the fundamental theory behind the Accelo Filter System of Direct Recirculation. The trickling filter effluent is teeming with active aerobes, and by returning the unsettled filter effluent directly back to the filter the number of active aerobes in the filter is increased to myriads.

It is the UNSETTLED trickling filter effluent returned DIRECTLY to the filter that provides Mass Action of active aerobes. The aerobic bacteria in the unsettled effluent have been well supplied with oxygen and are in their most active state. Their span of life is from 3 to 5 minutes, and within that time they divide and multiply. To take advantage of this tremendous activity, the Accelo Filter system returns the unsettled effluent directly to the filter.

Write for authentic operation reports of Accelo Filter plants for proof of improved treatment results.

INFILCO Inc., 325 West 25th Place, Chicago 16, Ill.
*Trade-mark Reg. U. S. Pat. Off.

IF YOU WANT TO KNOW — ASK INFILCO

Cast Iron Pipe

PLAIN CAST OR SPUN CENTRIFUGAL

Cast Iron Pipe and Special Castings, Bell and Spigot, Flange, Flexible Joint, Culvert, Milled and Plain End Tubes, Cylinders, Flanged and Bell and Spigot Fittings, High Pressure Fire Service Pipe, Warren Short Body Specials, Threaded End Pipe.

Sizes 2 to 84-inch

Pipe manufactured in accordance with standard specifications adopted and approved by water works associations and engineers.

Warren Foundry & Pipe Corp.
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this keeps out humans,

but... it won't keep out algae, phenols and other contaminants.
Such pollution in your raw water causes tastes and odors—
now successfully removed with Mathieson's Chlorine Dioxide.

A powerful oxidizing agent, Chlorine Dioxide attacks algae...oxidizes phenols and other troublesome compounds...destroys bacteria as well. Tastes and odors are usually eliminated. Your community is served with water that is *good to drink.*

Municipalities the country over are standardizing on the new Mathieson Chlorine Dioxide technique. Write us for details. THE MATHIESON ALKALI WORKS (Inc.), 60 East 42nd Street, New York 17, N. Y.

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CHLORINE DIOXIDE

Chlorine Dioxide . . . Sanitation HTH . . . Liquid Chlorine . . . PH-Plus (Fused Alkali) . . . Caustic Soda Soda Ash . . . Bicarbonate of Soda . . . Ammonia, Anhydrous & Aqua . . . Carbonic Gas . . . Dry Ice Sodium Chlorite Products . . . Sodium Methylate

"We have cut our 'unaccounted-for' water 30% since changing to Badger Meters"

"... and our revenues have shown a marked increase," continues the City Clerk of a well-managed industrial city. "Badger Meters are giving the city uninterrupted service from year to year at a minimum cost."

Millions of satisfied users of Badger Meters in over 5,000 communities prove that "It pays to BUY BADGER."

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BADGER Water METERS

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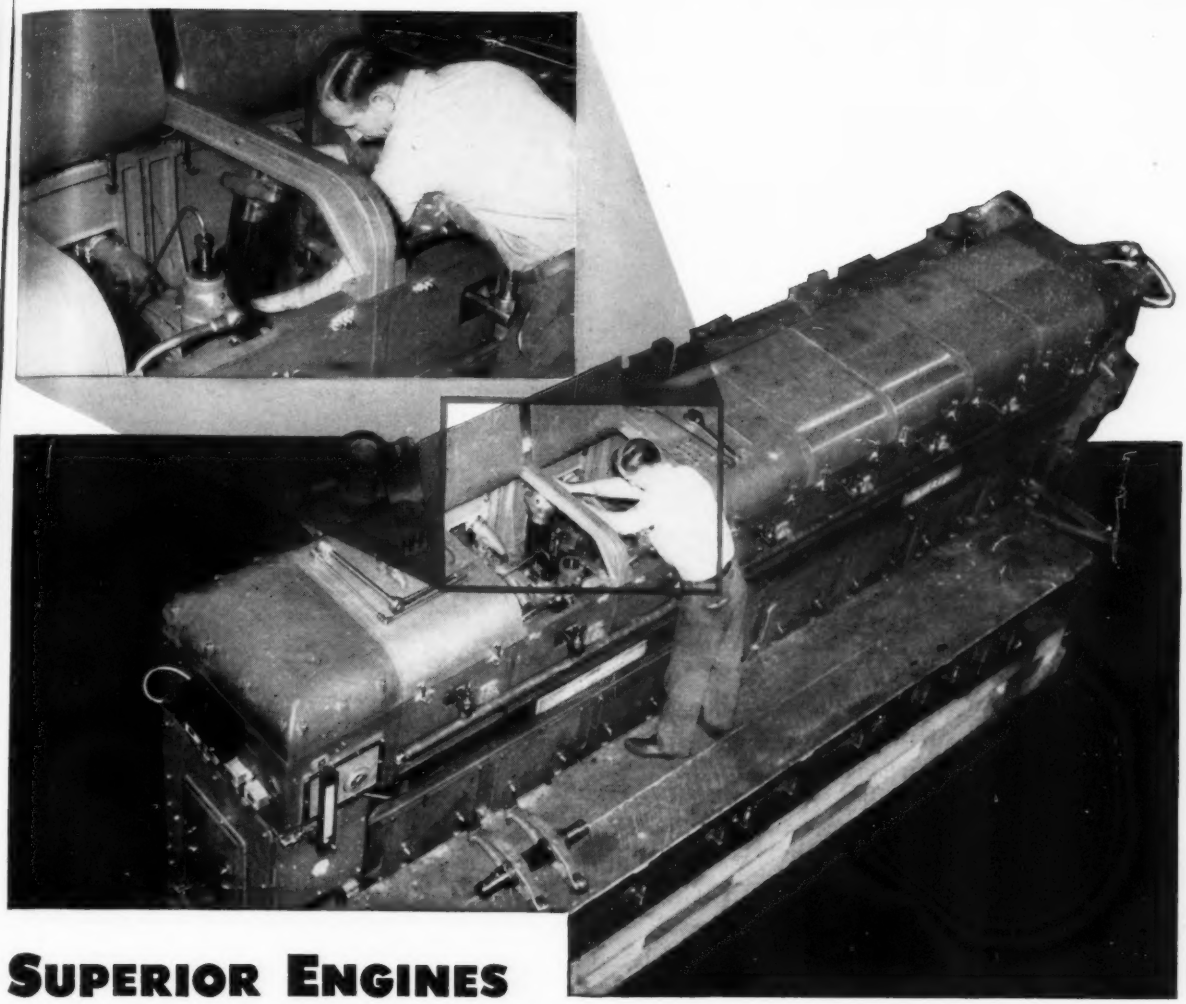


SUPERIOR ENGINES

smash Operating Costs!

DUAL intake and exhaust valves, mounted in cages, help model 60 or 80 Superior Diesel Engines reduce operating costs.

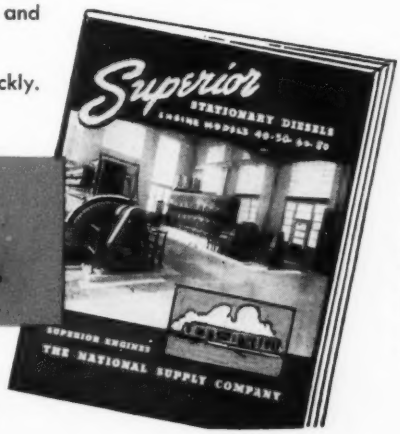
Dual valves contribute to higher volumetric efficiency, fuel economy and greater overload capacity. Valve maintenance is low because they have less tendency to warp and require less regrinding.

Valve cages are easy to remove and replace quickly. And they eliminate prolonged shut-downs to remove and replace the head.

For operating economy under all kinds of conditions, specify a Superior Diesel Engine. One of our field engineers will be glad to point out the savings made possible by these tough engines.

Superior DIESEL

SUPERIOR ENGINE DIVISION OF
THE NATIONAL SUPPLY COMPANY
Plant and General Sales Office: Springfield, Ohio



Send for this Booklet

A new 28 page booklet, "Superior Stationary Diesel Engines" is just off the press. It's packed with facts that tell *how, when and why* Superior Diesel Engines can help you build profits. Write for your free copy today.

SANITARY FILL MAKES PICNIC GROUNDS

FOR JACKSON, MISSISSIPPI

BUILT BY THE DROTT BULLCLAM SHOVEL METHOD

Several refuse disposal problems were licked by officials of Jackson, Mississippi, by constructing a sanitary fill with the Drott Bullclam Shovel.

1. They converted an unattractive waste area into an attractive, useful addition to their city park picnic grounds.

2. They closed their open dump — rid the community of this annoying "eye-sore" and menace to health.

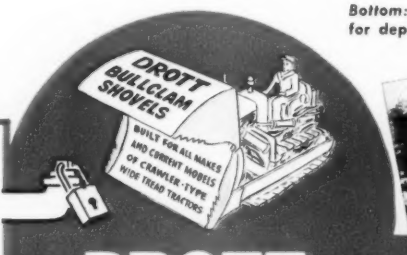
3. They saved money. A sanitary fill is also the most economical method of refuse disposal. Means only a single investment! One machine — the Drott Bullclam Shovel — handles all operations . . . digs the trenches, compacts and covers the refuse. And the fill can be constructed anywhere . . . thus keep hauling cost down.

Whatever your refuse disposal problem . . . it will pay you to investigate the Drott Bullclam Shovel Method of Sanitary Fill. Write for full information.

Top: Section of new, clean picnic site at Jackson, Miss. — built entirely from refuse the Drott Bullclam Shovel way.

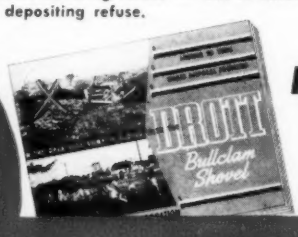
Center: Bulldozing and compacting the refuse.

Bottom: Covering refuse — dirt is obtained from trench built for depositing refuse.



Operated by DROTT POSITIVE CLOSED HYDRAULIC SYSTEM • SMOOTH • QUICK • DEPENDABLE. Keeps dirt and air out . . . keeps oil in! Used successfully on Drott equipment for many years.

DROTT
UNIVERSAL EQUIPMENT



FREE

On request; descriptive catalog and list of cities using Drott method. Also cost data on collection and sanitary fill equipment.

DROTT MANUFACTURING CORP.
4844 N. GREEN BAY AVE. MILWAUKEE 12, WISCONSIN

there's a

GARDNER-DENVER SINKER

that's right for your jobs!

Wherever you find rock, there's a Gardner-Denver Sinker that can help you make it "fly." For Gardner-Denver Sinkers have special features which help get the job done fast—at lower cost.

With Gardner-Denver Sinkers, use a Gardner-Denver All Water-Cooled Portable Compressor. Complete water jacketing of cylinders assures steady, highly efficient operation under constant load. For complete information, write Gardner-Denver Company, Quincy, Illinois.

GARDNER-DENVER

SINCE 1859

S33

Weighs only 31 pounds—but a heavyweight on performance! Like all other Gardner-Denver sinkers, it has powerful four-pawl rifle bar rotation—easy riding—efficient hole cleaning.

S45

A 45-pound drill designed for work in medium hard rock where high drilling speed is demanded. A favorite with operators because its easy riding helps eliminate physical strain.

S55

Users call it the most efficient 55-pound drill on the market. It has perfect balance—which means greatest drilling capacity with easy riding and conservative air consumption.

S73

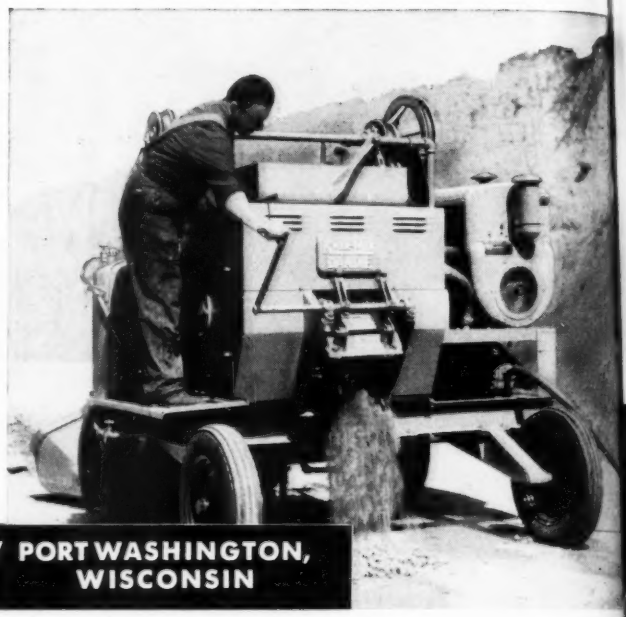
Sixty-seven pounds of speed and power to drill faster and deeper in harder ground. Ask for information about Gardner-Denver heavy sinking drills for shafts.

Gardner-Denver WBH365 Diesel-driven Portable Compressor.

4 Modern Tools to Cut

END DISCHARGE SAVES PATCHING TIME with KWIK-MIX BITUMINOUS MIXER

Kwik-Mix Bituminous Mixers materially reduce patching time, because they combine two important time-saving features: (1) End Discharge, (2) Non-Tilting Discharge. End discharge makes possible direct pouring of mix into break. No wheelbarrow is needed. Because of end discharge, mixer never is pulled through new patch. Non-tilting feature speeds discharge every batch. Full drum is emptied in seven seconds through big discharge door. Door easily opened with one hand. Back-breaking tilting is eliminated. Operator fatigue near end of shift and resulting production loss is eliminated.

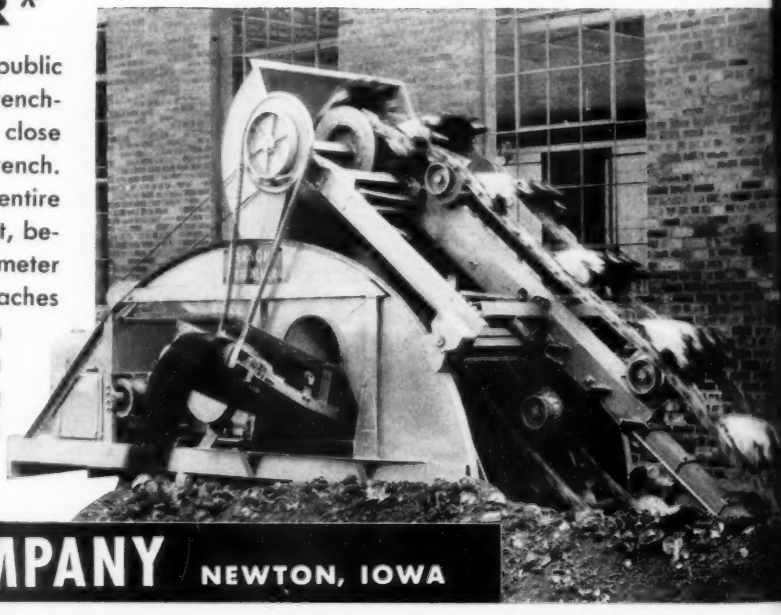


KWIK-MIX COMPANY PORT WASHINGTON, WISCONSIN

IDEAL FOR CITY WORK . . . *Parsons* 221 TRENCHLINER*

The new Parsons 221 Trenchliner, public service model in the Parsons line of trenchers, sidesteps surface obstructions as close as 10" to either side of the projected trench. Boom shifts from side to side across entire width of boom carriage. Easy to shift, because it rides smoothly on big diameter rollers. Arc type spoil conveyor reaches up 6' 9", easily dumps into 1½-ton trucks. Telescoping ladder type boom can dig over and under obstructing pipes in trench, virtually eliminating hand work.

*T/M REG. U. S. PAT. OFF.



PARSONS COMPANY NEWTON, IOWA

YOUR Maintenance Costs

Preventive maintenance with KOEHRING MUD-JACK pays BIG DIVIDENDS

T/M REG. U. S. PAT. OFF.

Koehring Mud-Jack reduces maintenance costs on concrete street slabs, sidewalks, curbs and gutters. Sunken slabs, sidewalks, curbs and gutters can economically be raised to grade before weakened subgrade conditions can cause damage. Through small holes drilled into depressed slab Mud-Jack pumps inexpensive cement-sand slurry to replace firm foundation beneath concrete. Cost of Mud-Jack maintenance is but a fraction of replacement cost. Koehring No. 10 Mud-Jacks and Koehring No. 50 Mud-Jacks are used by cities, towns and counties throughout the U. S.

HEAVY-DUTY *Handyman*

In the Koehring 205, the new Heavy-Duty Half Yard, exceptionally heavy construction for a machine of its size is combined with all the half yard features that make this model ideal for city yard and maintenance work. Independent traction and fast swing step up output when 205 works as crane or clamshell, handling aggregates, pipe, lumber. Chain-driven double cable crowd gets extra power to dipper when 205 is used as shovel. Completely and easily convertible. Available on crawlers or on truck chassis as a one-man operated Cruiser Crane.

KOEHRING PRODUCT

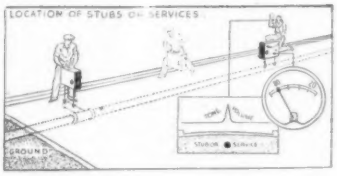
KOEHRING COMPANY MILWAUKEE 10, WISCONSIN

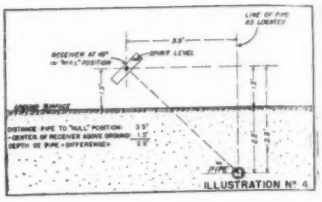
782

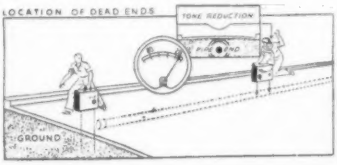
Buried Pipe and Cable Finder

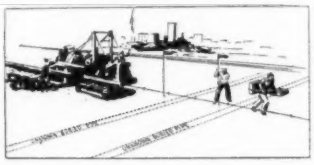
M-SCOPE

Water and Oil Leak Detector









The M-Scope is solving—successfully—the varied problems involved in the development, operation and maintenance of buried pipe and cable systems and is in daily use by representative organizations in such important groups as:

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141 ASHLAND PLACE, BROOKLYN 1, NEW YORK

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ROCKFORD, ILLINOIS

Elevated water storage tank reconditioning; machine or sand blast cleaning; painting, repair and general maintenance of all types water storage tanks and standpipes.

Rust preventive and rust inhibitive paints used.

Personal inspection by experienced tank men and free estimate cost upon request without obligation.

ALL WORK GUARANTEED BY PERFORMANCE BONDS.

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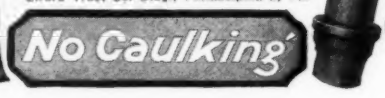
FOR JOINTING CAST-IRON WATER MAINS

Melted and Poured *No Large Bell-holes to Dig*
Saves at Least 75%

Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 50 years ● Leadite joints improve with age.

Be sure it is Leadite and accept no imitations

THE LEADITE COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.



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Regularly

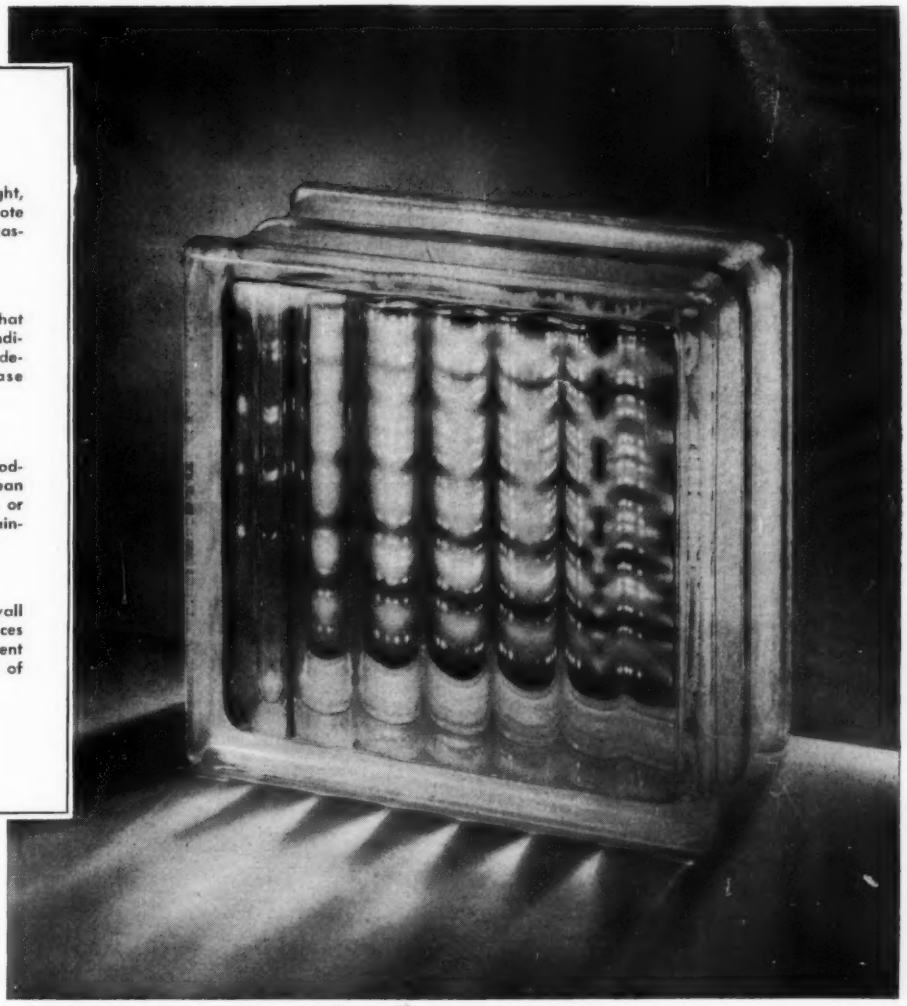
Ask where you work . . . Ask where you bank

PC GLASS BLOCKS
provide ample, diffused daylight, which can be directed to remote working areas, thereby increasing usable floor space.

PC GLASS BLOCKS
possess insulating qualities that reduce heating and air-conditioning costs, help maintain desired temperatures, decrease condensation.

PC GLASS BLOCKS
give any building a neat, modern appearance. They clean easily, rarely need repairs or replacement, help reduce maintenance costs.

PC GLASS BLOCKS
form a solid, translucent wall which insures privacy for offices and work rooms. They prevent infiltration of chilling drafts, of harmful dust and grit.



One building material gives you all these advantages

● Plant managers who have installed PC Glass Blocks can tell you that they improve the appearance of the plant, set new high standards of efficiency, hold operating costs down to new lows. Whether you are planning for new buildings or for a modernizing program, be sure you have the latest information on PC Glass Blocks. Why not send the coupon today for our recent booklet? No obligation. Pittsburgh Corning Corporation also makes PC Foamglas Insulation.

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FOR ADDITIONAL INFORMATION SEE OUR INSERTS IN SWEET'S CATALOGS

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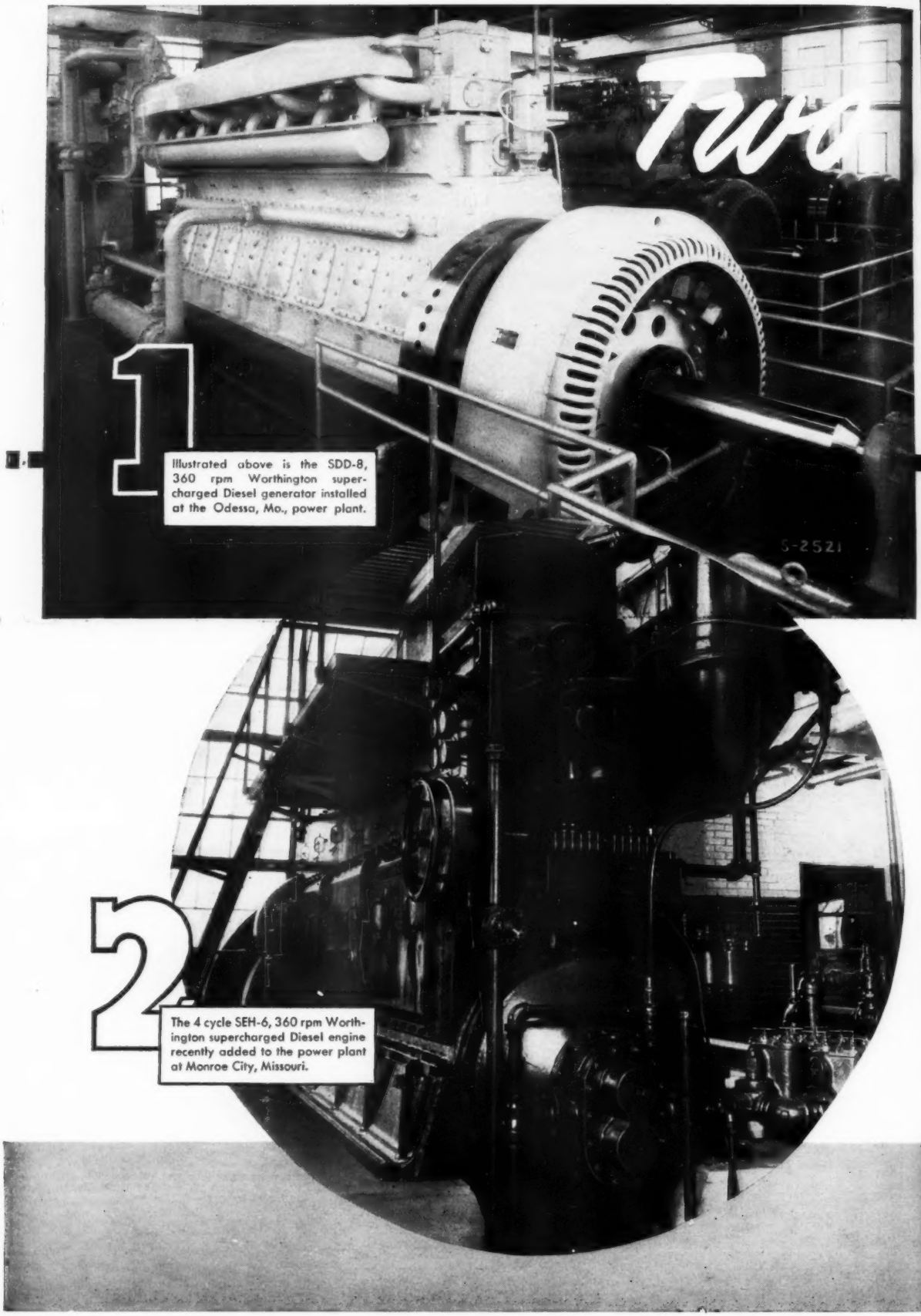

Two
1
Illustrated above is the SDD-8, 360 rpm Worthington supercharged Diesel generator installed at the Odessa, Mo., power plant.
S-2521
2
The 4 cycle SEH-6, 360 rpm Worthington supercharged Diesel engine recently added to the power plant at Monroe City, Missouri.

Power Plants

PREPARED FOR TOMORROW'S GROWTH

Operating with Economy Today

In Missouri the municipalities of Monroe City and Odessa design their generating plants for *future* power demands by installing Worthington supercharged Diesel engines, today.

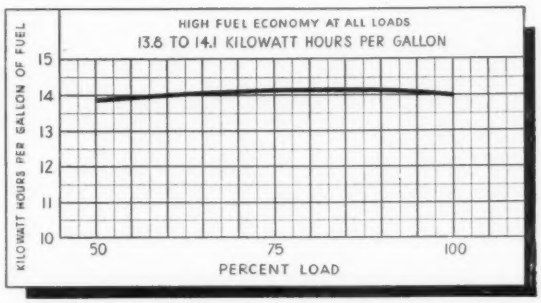
And the new Diesels . . . installed in both plants in 1946 . . . supplement other Worthington Diesels placed in Monroe City since 1935, and in Odessa since 1939.

For the investigated facts proved to these two communities that the low fuel demands of the Worthington supercharged Diesels were economically sound, even when operated at fractional capacity.

Yet, future increases in power demands are adequately provided for at the same low fuel consumptions (see chart), making the future use of these Worthington Diesels continually profitable.

So if your community seeks power that is highly economical today . . . greatly profitable in the future . . . designed for long life and easy maintenance . . . then investigate Worthington supercharged Diesel engines.

Write for more information and prove to yourself that *there's more worth in Worthington. Worthington Pump and Machinery Corporation, Engine Division, Buffalo, New York.*



This chart illustrates the Worthington Diesel's low fuel costs . . . and the very slight rise in fuel demands when changed from fractional to full power loads.

WORTHINGTON

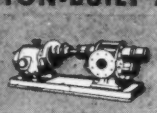
E7-6

YOUR PARTNER IN POWER PROGRESS

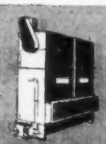
Diesel engines, 150 to 2,640 hp . . . gas engines, 175 to 2,470 hp . . . dual fuel engines, 225 to 2,470 hp.

WORTHINGTON-BUILT AUXILIARIES

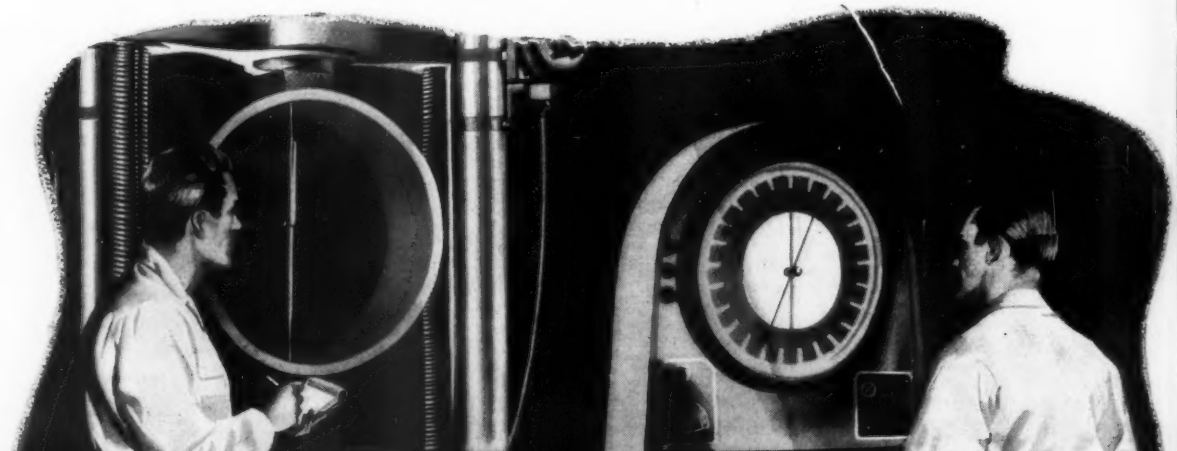
Air King Compressors


Oil Transfer Pumps

Cooling Water Circulating Pumps


Evaporative Type Engine Water Cooler

PUTTING SCIENCE TO WORK



THE ring test, shown above, is a scientific method for determining the modulus of rupture of pipe. It is not a required acceptance test but one of the additional tests made by cast iron pipe manufacturers to ensure that the quality of the pipe meets or exceeds the requirements of standard specifications.

A ring, cut from random pipe, is subjected to progressively increased crushing load until failure occurs. Standard 6-inch cast iron pipe, for example, withstands a crushing weight of more than 14,000 lbs. *per foot*. Such pipe meets severe service requirements with an ample margin of safety.

Scientific progress in the laboratories of our members have resulted in higher attainable standards of quality in the production processes. By metallurgical controls and tests of materials, cast iron pipe is produced today with precise knowledge of the physical characteristics of the iron before it is poured into the mold. Constant

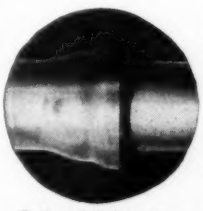
CAST IRON PIPE

RK TO PROTECT PIPE QUALITY

control of cupola operation is maintained by metal analysis. Rigid tests of the finished product, both acceptance tests and routine tests, complete the quality-control cycle. But with all the remarkable improvements in cast iron pipe production, we do not forget the achievements of the early pipe founders as evidenced by the "Survival and Retirement" report recently published by the A. W. W. A. Of all the cast iron pipe laid in the 25 cities studied, some as early as 1817, more than 96 per cent of all pipe, 6 inches and over, is still in service.

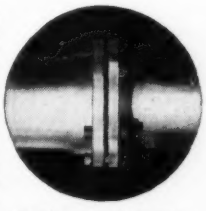
"Cast iron pipe not only offers a century or more of efficient life as a structure—it offers a century or more of efficient life as a carrier. In the limited areas with tuberculating waters, cement-lined cast iron pipe is tuberculation-proof and insures high carrying capacity for the life of the pipe. In the greatly predominating areas without tuberculating waters, the carrying capacity of unlined cast iron pipe remains practically unimpaired for the life of the pipe."

Joints for Cast Iron Pipe



Bell-and-Spigot Joint: the standard joint for water and sewerage service.

A variety of joints are available, of which the two most widely used are illustrated. Special purpose joints such as the Ball-and-Socket, or Flexible Joint for underwater use, and the Flanged Joint for above-ground use, are also available.



Mechanical Joint: bottle-tight and flexible, now with interchangeable parts.

"SILENT SERVICE is not enough"—A.W.W.A.

The American Water Works Association is recommending to its members, for local action, a sound, well-planned program of Public Relations publicity and advertising. It is based on the premise that good water service, like good health, is too often taken for granted, in which case favorable public opinion is dormant.

To co-operate with this program and help to arouse national recognition of the efficient service rendered by America's water supply systems, the Cast Iron Pipe Research Association is presenting little known facts about public water supply to the *six million* readers of "Time" and "Nation's Business" throughout 1947.

For example, the following human-interest cartoon and excerpts from a current advertisement.

"biggest penny in the world"

It buys you more than 500 glasses of safe, palatable water supplied by your public water supply system. Yes, the penny you spend for that indispensable service—*water* service—has the highest purchasing power in the world. Less than ten of them buys 300 gallons (average daily family consumption) delivered to your faucets. Yet few of us stop to consider that this convenient, reliable, low-cost service is due to the efficiency of America's public water supply systems.

Another big reason for the low cost of water is cast iron pipe because of its low maintenance cost and unequalled long life.

A good water supply rarely receives public recognition because, like good health, it is taken for granted. But it is the community's greatest asset, guarding health, life and property. Cast Iron Pipe Research Association, T. F. Wolfe, Engineer, 122 So. Michigan Avenue, Chicago 3, Illinois.

SERVES FOR CENTURIES

OH, BROTHER!...
what a way to run
SERVICE LEADS

NEW
hand held
Model LHH-2

Bores 2-inch open hole 30-50 feet. Reams to 3½ and 4½ inches.

3.2 Horsepower!... on 90 lbs. air

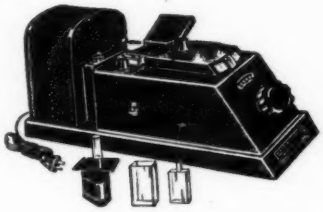
The new Hydrauger Model LHH-2 is just about the *"sweetest and swiftest"* way anybody ever saw when it comes to running-in service leads. Operating principle is identical with the BIG Hydrauger Machines . . . but made small, tough and light for fast one-man operation.

Write for
CATALOG TODAY!

HYDRAUGER*
*Reg. U. S. Pat. Off.
EARTH BORING TOOL
HYDRAUGER CORPORATION, LTD.
116 New Montgomery St., San Francisco, Calif.

KLETT SUMMERSON
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street New York, N. Y.

JAEGER AIR COSTS YOU LESS

Micro-precision built • with 75% to 100% larger "ultra lapped" valves • force feed lubrication • slower (800 f.p.m.) piston speed • Deliver more air per pound of fuel and drier, cooler air (within 100° of atmosphere) with notably low upkeep.

THE JAEGER MACHINE CO. Main Office and Factory Columbus, Ohio

REGIONAL OFFICES 8 E. 48th St. New York 17, N.Y. | 226 N. La Salle St. Chicago 1, Ill. | 235 American Life Bldg. Birmingham 1, Ala.

PUMPS · MIXERS · LOADERS · HOISTS · PAVING MACHINERY

Changed Your Address?

If so, and your copies of THE AMERICAN CITY are not reaching you, please mail this form to us at 470 4th Avenue, New York 16, N. Y. so that your stencil may be corrected.

Changed from .....

..... (former address)

Changed to .....

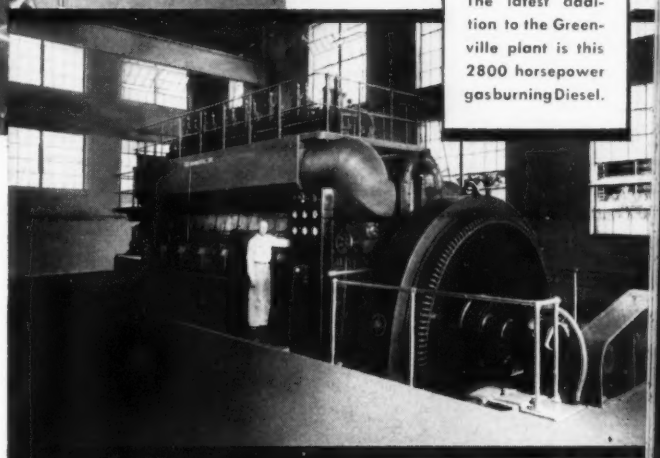
.....

..... (new address)

Name .. .. (please print)

Position .....

NUMBER 5 for Greenville, Texas

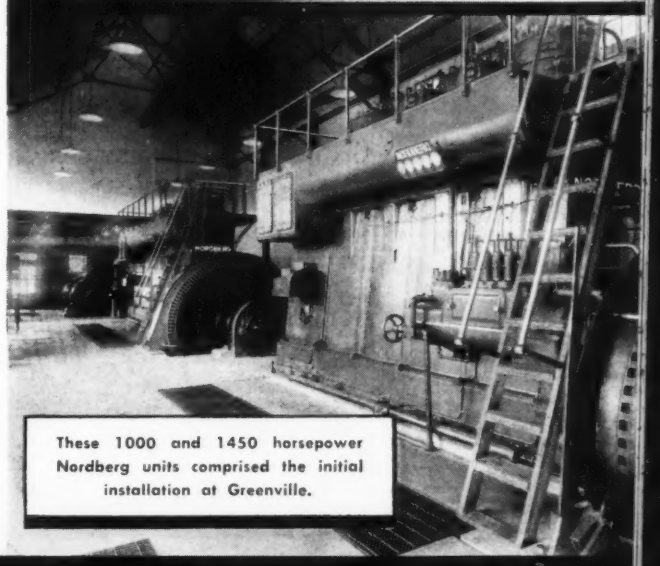


The latest addition to the Greenville plant is this 2800 horsepower gasburning Diesel.

THIS 9650 horsepower Nordberg Diesel engined municipal power plant at Greenville, Texas is another of the many satisfied users that continue to place repeat orders for additional Nordbergs because of the years of excellent performance of their engines. Following the initial installation of two engines in 1933, units were added in 1938, 1942 and 1946, the last two installed using natural gas for fuel.

The performance of Nordberg Diesels at Greenville has been noteworthy. In addition to being dependable, they have been economical, the latter being shown by the fact that Greenville has a lower rate than any city of comparable size in Texas. If you are considering power units, investigate the merits of Nordberg Diesel Power.

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN

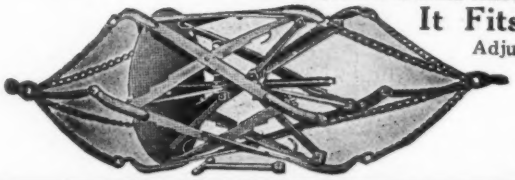


These 1000 and 1450 horsepower Nordberg units comprised the initial installation at Greenville.

NORDBERG
DIESEL ENGINES

EXPANDING ROOT CUTTER & SEWER CLEANER

Open and in action removing roots and caked sediment like this.



It Fits in on Every Sewer Cleaning Job

Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY

108 East Walnut St. Nappanee, Ind.

WORTHINGTON-GAMON

LIQUID METERS

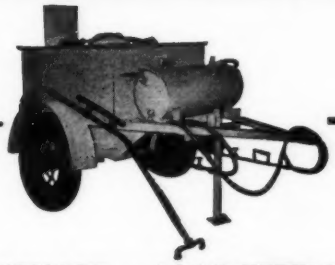
All Sizes All Types

Worthington-Gamon Meter Co.

Subsidiary

WORTHINGTON PUMP & MACHINERY CORP.

296 South Street Newark 5, New Jersey



ASPHALT and TAR KETTLES

Fire-Proof—Oil Burning

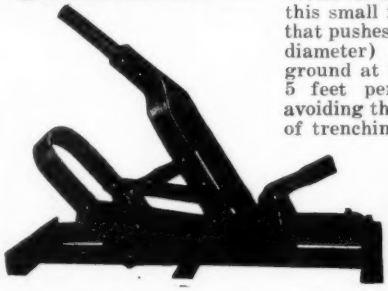
Hand and Motor driven spray.
Many sizes. Write for catalog.

Elkhart White Mfg. Co. Indiana

GIANT

Reduce Pipe-Laying Costs with a GIANT Pipe Pusher

Write for booklet telling of this small inexpensive tool that pushes pipe (up to 15" diameter) through the ground at the rate of 1 to 5 feet per minute, thus avoiding the heavy expense of trenching.



Address Dept. P

GIANT MFG. CO.

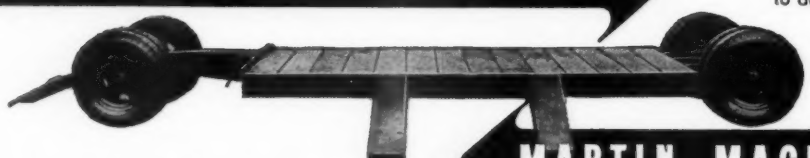
Council Bluffs, Ia.

MARTIN CARRYHAUL TRAILERS

TRADE MARK REGISTERED

MARTIN CARRYHAUL TRAILERS
"Make Hauling A Pleasure!"

Ease of loading, dependability and economical operation are three Martin CARRYHAUL Trailer characteristics which make them the leaders in the field.
Regardless of your hauling job, there's a proper size Martin CARRYHAUL Trailer to do it for you safely and economically.

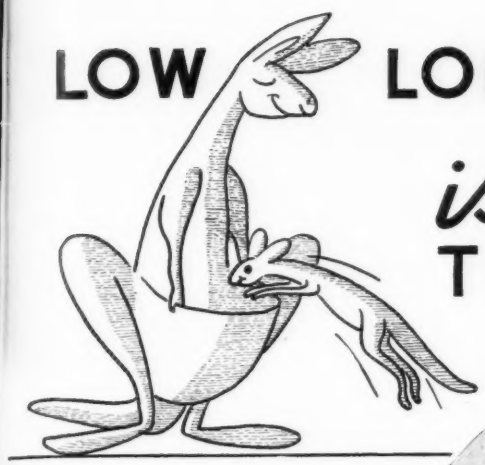


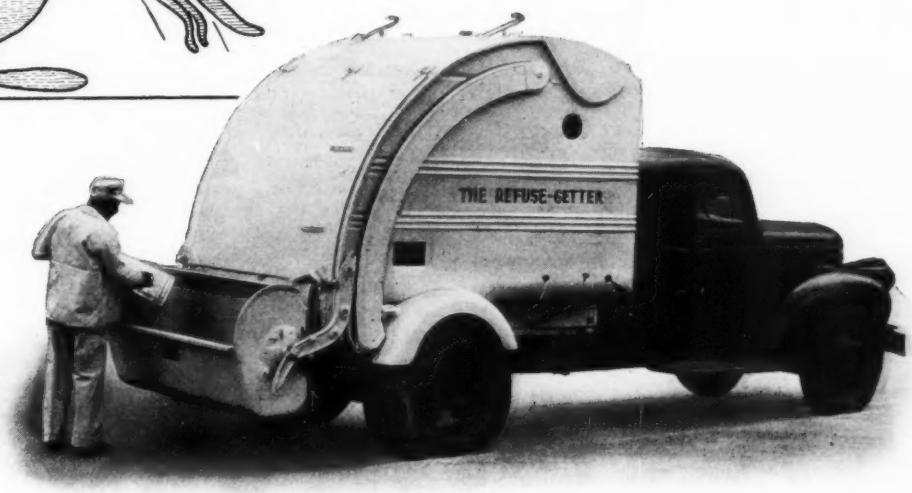
Your "CATERPILLAR" Dealer is your MARTIN Dealer. See him for your trailer needs.

MARTIN MACHINE COMPANY

KEWANEE, ILLINOIS

LOW LOADING HEIGHT *is important* TO YOU TOO!





— important because it can mean a big difference in the cost of your refuse collection.

The hip-high loading level of the LEACH REFUSE-GETTER requires the minimum of lifting by the operator.

Less fatigue means greater efficiency.

Strains and injuries due to lifting shoulder high or higher are costly items. The short lift to load the LEACH bucket eliminates these dangers.

Time and energy saved in loading can be used for making more collections.

Reduce your operating costs and speed up your refuse collection with the LEACH REFUSE-GETTER.

LEACH COMPANY Established 1887 **OSHKOSH, WISCONSIN**

WILKINSON LINE LOCATOR

"So Simple to operate"

Accurately Locates All Mains, Services, Valves, Stubs and the like . . . . . .

This is the new ***all-in-one*** pipe locator—carried by a single operator in one hand, leaving his other hand free to operate the controls.

95% of all underground pipe can be quickly located by one operator using this instrument on the single handle. The *rigid handle* ensures positive loop balancing.

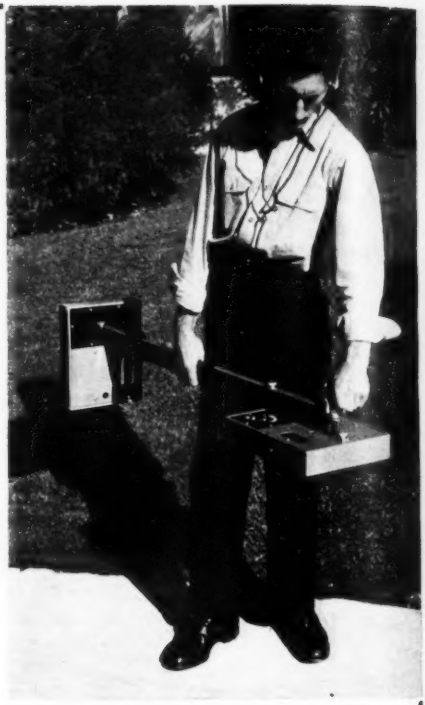
When dismounted the two units may be operated separately.

No special parts: Uses the ordinary dry-cell batteries, obtainable everywhere.

Bulks small—weighs little—each unit only five pounds!—saves labor—expedites the job!

Investigate the exclusive Wilkinson method of Loop Balancing.

Write for circular.

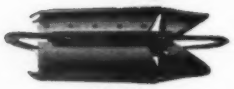


WILKINSON PRODUCTS COMPANY

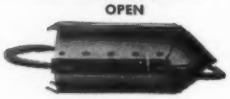
Originators of modern light-weight locating equipment

P. O. Box 1774, Wilshire-LaBrea Sta. LOS ANGELES 36, CALIFORNIA

KEEP SEWERS OPEN with OK CHAMPION POWER SEWER CLEANER



OPEN



CLOSED

Town and City officials throughout America are adopting OK CHAMPION Power Sewer Cleaner to keep sewers clean and efficient. Takes roots, dirt, sand, and other debris up from main in one continuous operation. All men work above street level.

Pulling forward opens the jaws that bite into obstructions. Reversing the pull on the bucket automatically closes jaws which hold load pulled back to street level. Write for complete details.

CHAMPION CORPORATION 4716 SHEFFIELD HAMMOND, IND.

"GUNITE"

NEW CONSTRUCTION — REPAIRS

Prestressed Tanks	Steel Encasements
Reservoir Lining	Dam Repairs
Pen Stock Lining	Tunnel Lining
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Disintegrated Concrete Structures Renewed
Repairs to all types of Masonry

Write for our new Manual

PRESSURE CONCRETE CO.

Engineers & Gunite Contractors

So. Court Street, Florence, Alabama
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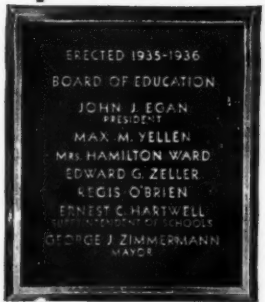
BRONZE TABLETS



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Municipal Buildings, Hospitals, Homes, Courts, Schools, Art Centers, Statues, Cornerstones, Doorplates, Signs.

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"Bronze Tablet Headquarters"

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CHAPMAN
Cone Valves

Give You

COMPLETE FLOW CONTROL

On Water Works, Sewage, and Air Lines

Chapman Cone Valves are widely used on water works, sewage, and air lines for manual or automatic control of flow. Easy to operate and free from leakage, they have a wide variety of applications when equipped with the proper auxiliary controls: maintaining constant water level in reservoirs, controlling water level in tanks, limiting pressure rise in pipe lines, stopping flow through pipe lines in case of a break, etc. In addition to their use for water. sewage, and air, they may also be used for ammonia, chemicals, gasoline, oil, pulp, steam, and tar.

The control mechanism of Chapman Automatic Cone Valves automatically opens and closes the valve slowly with the pump running; and, in case of power failure, automatically closes the valve rapidly to prevent pump reversal. Manual closure by hand wheel, independent of the automatic mechanism, is also provided. Chapman Manual Cone Valves are actuated solely by means of a hand wheel or hubnut. Over 1000 installations have proven the unusual efficiency of Chapman Cone Valves under the most severe test of actual service. Write for complete information *today.*

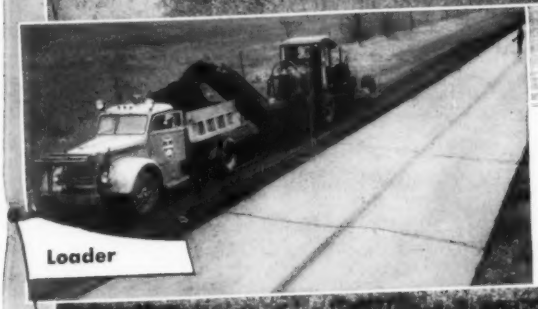
Iron Body Bronze Mounted Chapman Automatic Cone Valves, with dual automatic and manual controls.

The Chapman Valve Mfg Co.

INDIAN ORCHARD, MASS.

doubly effective

Thanks to All-Wheel Drive and All-Wheel Steer



All-Wheel Drive and All-Wheel Steer make it possible to mount an attachment ahead of or behind the "99-H" Power Grader without sacrifice of operating efficiency or machine control. When the entire weight of the rear end of the machine is transferred to the Roller, the "99-H" drives and steers with its front wheels. When the entire weight of the front end is transferred to the Bulldozer, the "99-H" drives and steers with its rear wheels. An ordinary motor grader would be helpless under such conditions. In addition to making it possible to use attachments that could not be mounted on ordinary motor graders, All-Wheel Drive and All-Wheel Steer provide traction and maneuverability that make every attachment — front, center or rear mounted — just that much more effective than it would be on other motor graders.

AUSTIN-WESTERN CO., AURORA, ILL., U. S. A.

BUILDERS OF ROAD MACHINERY

Austin Western

SINCE 1859

F-M Centrifugal Pumps: Double-suction, side-suction, multi-stage, angle-flow, vertical—all types, modifications and sizes

WHAT MAKES A GOOD PUMP DEALER?

A pump dealer is as good as the line he sells, and the facilities he maintains for servicing his customers' pumps.

You look to a *good* dealer for a *broad* line of pumps—with so many types and sizes that he can give you unprejudiced advice . . .

You look to a good dealer for the benefits of a service organization that's ready and able to solve your pumping problems at the drop of a hat . . .

That's why so many pump buyers think of their Fairbanks-Morse dealers as the *best in the business.*

Westco Turbine Pumps: Precision-built, with renewable liners: for high head pumping of wide variety of liquids

F-M Rotary Pumps: Simple, low cost units for general, wide application. Sizes from 3/8" to 5"

F-M Pomona Deepwell Turbines: Oil or water-lubricated: with open or closed impellers, as your job requires

F-M Propeller Pumps: For large capacity low head service

FAIRBANKS-MORSE

A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • PUMPS • SCALES • MOTORS • GENERATORS • STOKERS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS

WAYNE motor SWEEPER

FAST, ECONOMICAL, EASY TO OPERATE AND MAINTAIN

Manufactured in California, the Wayne motor Sweeper embodies the progressive features of design inherent to development in the West. Proven by years of thorough on-the-job tests under all sweeping and street conditions, the exceptional performance of the Wayne has deservingly won the respect of modern municipalities. On streets, parking lots, playgrounds — or any paved surface, the Wayne will do your sweeping work for less cost per mile, and the Wayne sweeps clean.

DELIVERY IS OBTAINABLE IN 60 TO 90 DAYS.

The Wayne picks up rubbish, cans, dirt and litter, and fills its 2-cubic-yard dirt hopper to capacity. The load is carried to any point desired and dumped in a neat, compact pile through the quick-opening, hydraulically-controlled hopper doors.

Write for information

WAYNE motor SWEEPER DIVISION

(BROWN-BEVIS COMPANY)

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A Rule . . .

and a pleasure

It's common knowledge that everyone, in consideration of his general good health, should drink several glasses of water a day. This rule is easier to follow when water is better tasting, spring-like and crystal clear—made that way by Ozone. Obnoxious tastes and odors caused by industrial pollution, algae and decayed vegetation are definitely reduced, often completely eliminated by Ozonation. In addition, Ozone is a powerful germicide—destroys pathogenic bacteria.

The net cost of Ozonation is surprisingly low in view of the great improvements it achieves and the chemicals it saves. Write us for Bulletin No. 105, "Ozone for Water Purification."

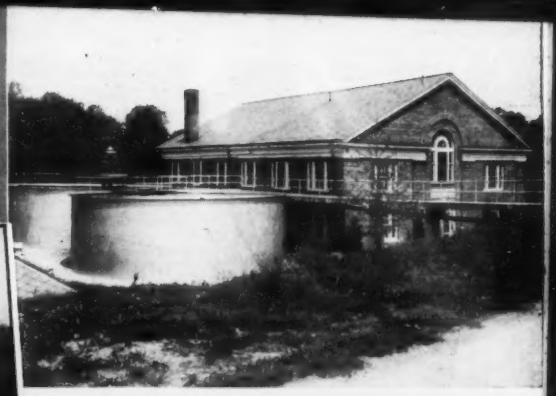
WELSBACH

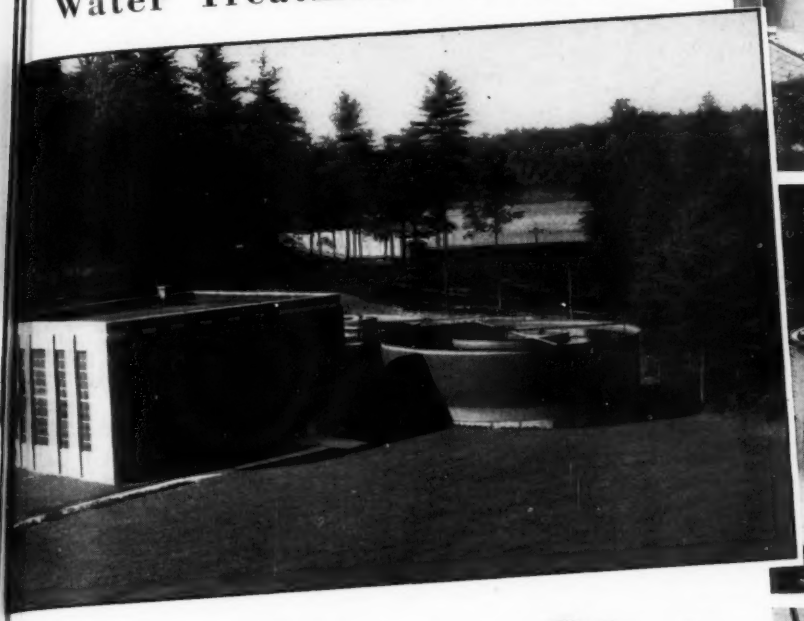
OZONE PROCESSES DIVISION

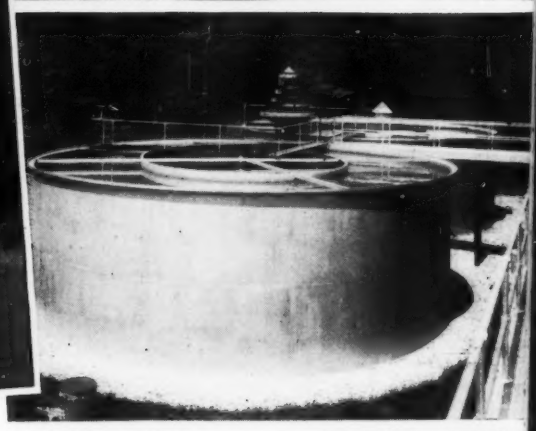
THE WELSBACH CORPORATION

1500 WALNUT ST. PHILADELPHIA 2

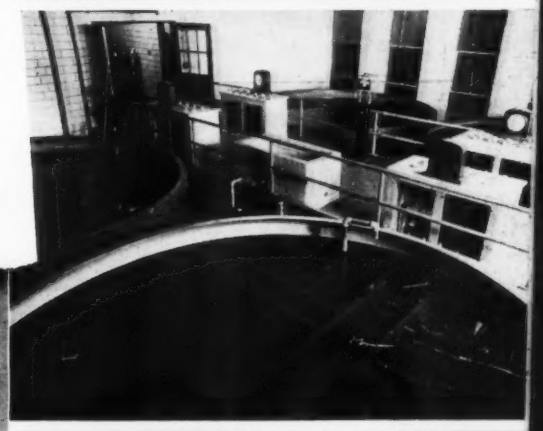
A permanent investment in efficient, economical Water Treatment Facilities

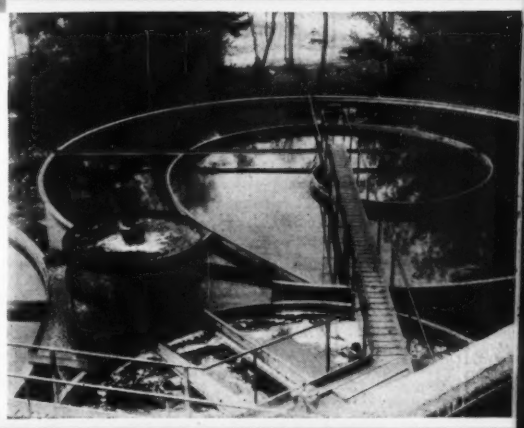






Steel Filtration Plants
by
Pittsburgh-Des Moines





The permanence of steel, employed for all water-handling equipment from intake point to elevated storage tanks, reservoirs or standpipes, is a modern advantage provided by Pittsburgh-Des Moines Filtration Plant design and fabrication.

We will be glad to consult with you on your water treatment project, and show you in detail the many features contributing to better performance and economy in P-DM Steel Filtration Plants. Write today, without obligation.

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Plants at PITTSBURGH, DES MOINES and SANTA CLARA

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CHICAGO	1216 First National Bank Building	SEATTLE	520 First Avenue, South

519 Alviso Road

TENNESSEE CORPORATION
Ferri-Floc
FERRIC SULPHATE
Atlanta, Georgia

It's Easy to CONVERT

Converting a Standard Dry Feeder for use with FERRI-FLOC—
MECH HIGH SPEED AGITATOR BUILT FROM SUMP PUMP MOTOR WITH 18-8 STAINLESS STEEL SHAFT AND PROPELLER
ANY STANDARD DRY FEED MACHINE
20 GAL. STONEWEAR CROCK HOLE SANDBLAST TO TAKE 2" HOSE. CROCK THIS SIZE WILL HANDLE FEEDS UP TO 150 LBS. PER HOUR. LEAD OR WOOD BEFFEL IN FRONT OF OUTLET TO PREVENT SHORT CIRCUIT.
SOIL WATER LINE ¼" WITH GATE VALVE FLOWING INTO OVERFLOW FUNNEL
1" RUBBER HOSE FROM FUNNEL TO POINT OF APPLICATION
APPROXIMATE COST FOR CONVERTING AVERAGE DRY FEEDER $25 TO $30
SOL WATER LINE ¼" WITH NEEDLE VALVE TO REGULATE FLOW

In most instances standard dry feed machines can easily be converted to feed a true liquid solution of Ferri-Floc. The advantages resulting make for a more economical, efficient and trouble free operation.

Ferri-Floc has lowered the operating cost of Municipal and Industrial water and sludge conditioning plants from the Rockies to the Atlantic Coast.

Ferri-Floc does not pass through a gummy stage when going into solution; no appreciable heat of solution is given off, thus eliminating the necessity of exhaust fans on the solution pot. Ferri-Floc is partially hydrated and can be stored for indefinite periods of time—it may be shipped in bulk or in 100 pound bags.

We invite your inquiries for further information on the converting of your dry feeder to the use of the economical coagulant Ferri-Floc.

TENNESSEE TC CORPORATION
Atlanta, Georgia — TENNESSEE CORPORATION — Lockland, Ohio

FOR BETTER MUNICIPAL FIRE PROTECTION . . . ADD PORTO-PUMPER

For any fire department, PORTO-PUMPER is a useful and necessary auxiliary. For small towns and villages, PORTO-PUMPER provides complete fire protection with the maximum in portability at lowest cost possible.

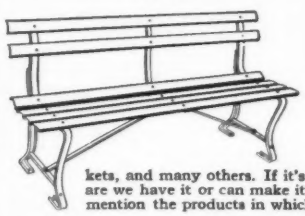
This high-pressure, high-output pumping unit takes water from any source—puts out the fire before it grows to disaster proportions by getting there first—by being there when you want it most. Pump utilizes fog and foam nozzles.

This sturdy unit attaches to any vehicle—goes where heavy equipment cannot—is towed by hand where necessary. Unit consists basically of independently powered high-pressure demountable pump—plus hose, ladders, axe and extinguisher, extra nozzles and hydrant adapters. Pump unit may be purchased separately for booster use.

Best of all, PORTO-PUMPER is lowest priced on the market. Your budget can accommodate it—your safety demands it. Write now for details—be prepared to advise tourist court owners, oil and gas bulk plants, industrials, all those beyond the umbrella of protection by city equipment. 200 gallon storage tank trailer also available.

PORTO-PUMP, INC.
227 IRON STREET DETROIT 7, MICHIGAN

Stewart Iron and Wire Products for All Types of Public Property



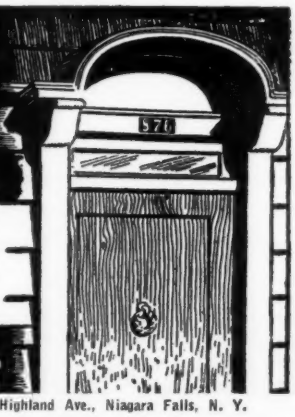
They comprise: Chain Link Wire and Iron Picket Fences and Entrance Gates; Wire Mesh Partitions; Steel Folding and Sliding Gates; Wire and Iron Window Guards; Plain and Ornamental Iron Railings; Bracket and Pier Lanterns; All Steel Settees (illustrated); Flagpoles; Bronze Tablets; Wire Trash Baskets, and many others. If it's made of iron or wire, chances are we have it or can make it. When writing for information mention the products in which you are especially interested.

Stewart IRON and WIRE FENCES
THE STEWART Iron Works Co., Inc.
1421 Stewart Block
CINCINNATI 1, OHIO

PROPER HOUSE NUMBERING

ADOPTED BY MUNICIPALITIES

Premax Stamped and Embossed Metal House Numbers have been generally approved because of their extreme legibility and permanence.



Premax Products
Div. Chisholm-Ryder Co., Inc., 4820 Highland Ave., Niagara Falls, N. Y.

Where headroom is limited—where you have to "duck" under an intersection or railroad, for example—ARMCO Pipe-Arches offer an ideal solution. Like other types of ARMCO Asbestos-Bonded Sewer Pipe, these arches are strong, light in weight, easy to handle, and assure years of low-cost trouble-free service.

Speed On The Job... *Easy On The Budget*

Installing ARMCO Asbestos-Bonded Sewer Pipe is easy . . . simple . . . fast. The long, light-weight pipe sections are lowered into place and securely coupled in jig-time. No curing and speed is the word — the kind that saves money, work, valuable days.

And for all its speed-on-the-job, there is no worrying later — your maintenance and replacement budgets can "relax." ARMCO Corrugated Pipe has the flexibility to withstand vibration, impact and heavy dead loads. Asbestos-Bonding plus a thick bituminous pavement in the bottom stoutly resist corrosion and erosion. And where there is not enough headroom for round pipe, ARMCO Pipe-Arches could well be the answer.

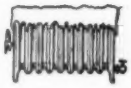
An experienced Armco Engineer will gladly give you full information — sizes, prices, delivery data — on ARMCO Asbestos-Bonded Sewer Pipe. Write our nearest office for full data. Armco Drainage & Metal Products, Inc., 735 Curtis Street, Middletown, Ohio.

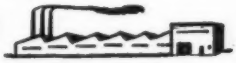
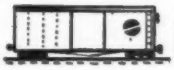
ARMCO

Armco Asbestos-Bonded Sewer Pipe

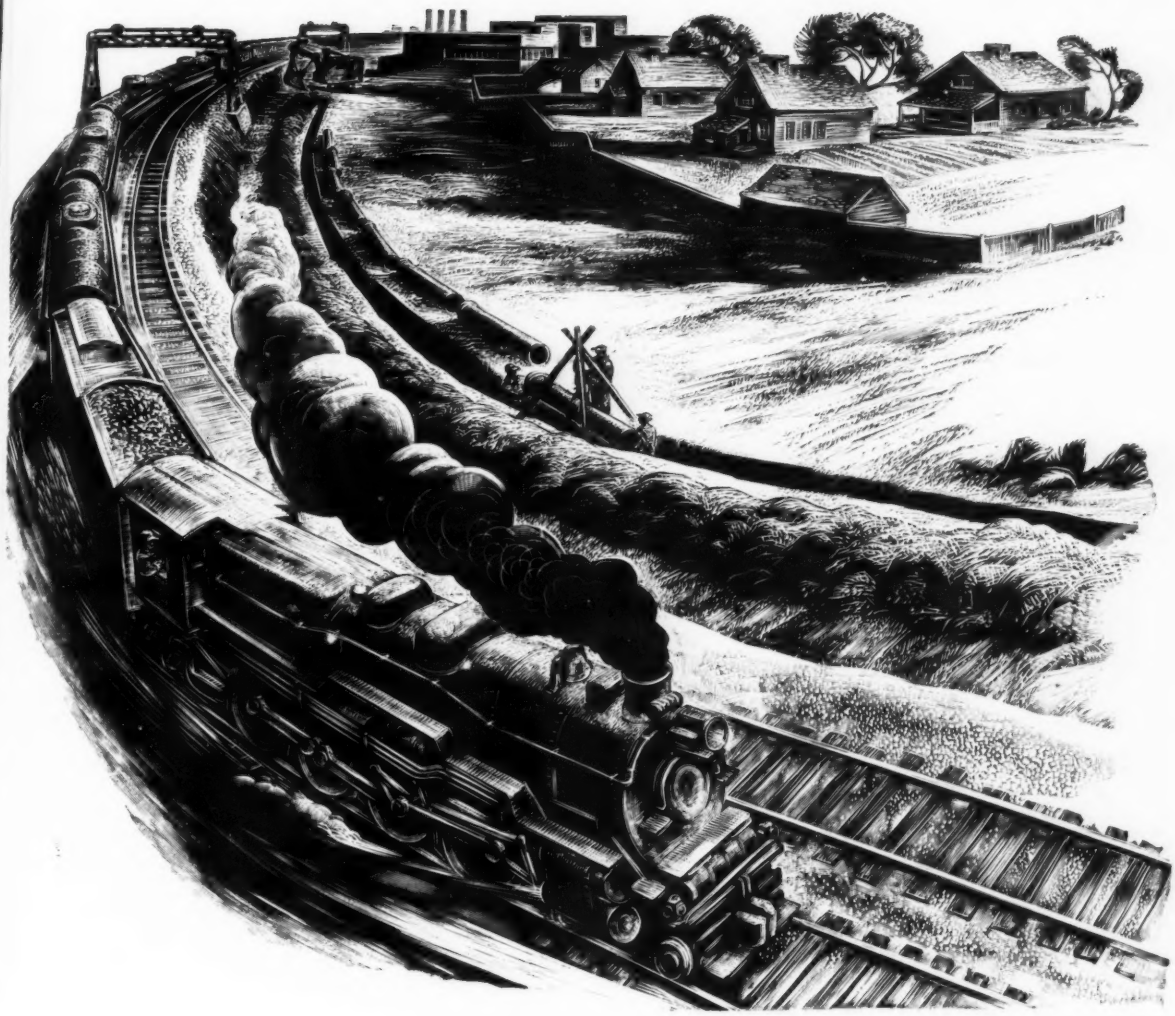
More Cities, Counties, States,

than ever now *remove* ice and snow with STERLING *"Auger Action"* Rock Salt

Icy pavements and snow-filled streets and highways slow or block traffic! Bring death and injury! They lower factory production, cut store profits, bring customers untold inconvenience... even cause fuel  and food shortages.

Snow and ice can be quickly removed with STERLING *"Auger-Action"* Rock Salt! Time, labor and money are saved. People, traffic, business and industry keep going!  Do as others are doing. Use STERLING Rock Salt. *ORDER NOW! in* carloads,  bulk or 100-lb. bags. A trained representative will gladly call. *Write Today!*

International Salt Company, Inc. Scranton, Pa.



Original Woodcut by Lynd Ward

Headquarters for cast iron pressure pipe—pit cast or centrifugally cast—large or small diameter—for water, gas, sewerage, industrial and railroad service. Five plants, including a specialized plant for the manufacture of fittings, are at the service of buyers of U. S. Cast Iron Pipe. Nearly a half-century of experience in pipe design is the background of our technical staff. You are invited to draw on their knowledge and experience in connection with any pipe problem you may have, without obligation.

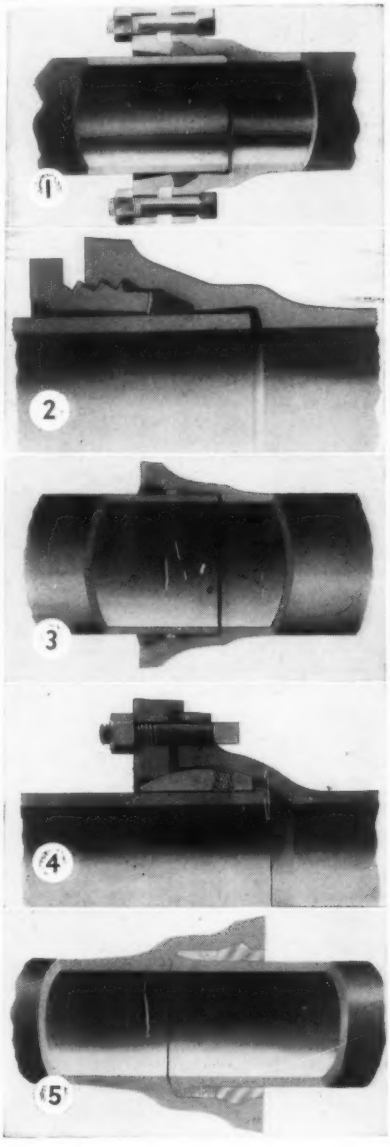
U.S. cast iron PIPE

U. S. PIPE & FOUNDRY CO.
General Offices: Burlington, N. J.
Plants and Sales Offices throughout U.S.A.

THESE 5 JOINTS

Supplied with Mono-Cast Centrifugal Pipe

MEET VARYING ENGINEERING & INSTALLATION NEEDS



1. DOUBLEX SIMPLEX JOINT PIPE—A standardized mechanical joint pipe equipped with stuffing box type of joint having a ring gasket, cast iron gland, and cast iron bolts. Scientifically designed to meet the exacting requirements of low, medium and high-pressure service in handling gas and liquids.

2. SCREW-GLAND JOINT PIPE—An all-purpose economical, mechanical joint pipe suitable for water, gas, oil and other fluids, developed in answer to the demand for a rubber packed joint without bolts suitable for normal service and pressure conditions. Screw-Gland Pipe provides for liberal lateral deflection and provision for expansion and contraction of the pipe line without leakage.

3. ROLL-ON-RUBBER RING JOINT PIPE—Designed as an alternate for bell and spigot pipe for conveyance of water, sewage or similar liquids. It is quickly and easily assembled by unskilled labor and after assembly the joint will easily deflect and remain tight under pressure.

4. MOLOX BALL AND SOCKET JOINT PIPE — An exclusive Acipco development, designed for river crossings and other installations requiring excessive joint deflection. It is positively locked against joint separation and remains bottle tight under pressures up to several hundred pounds per square inch at any angle within the range of deflection for which it is designed.

5. STANDARD BELL AND SPIGOT PIPE—Used under normal service conditions, the standard bell and spigot joint will give long and dependable service. The joints of bell and spigot pipe are made up of lead and jute, cement, or any other special jointing material customer may desire to use. It is supplied in diameters 3" through 48" inclusive.

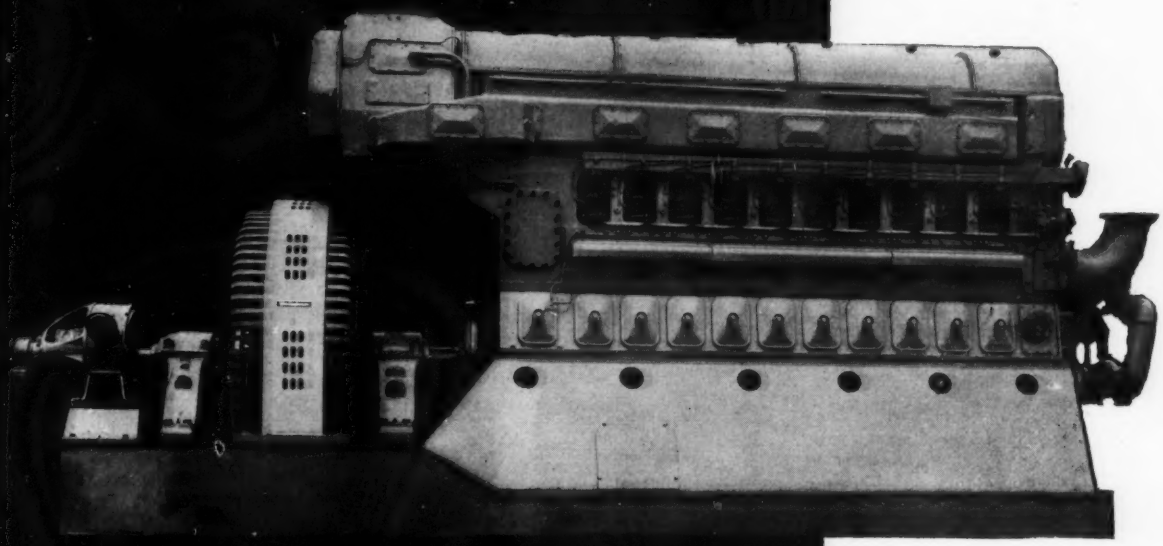
AMERICAN CAST IRON PIPE COMPANY

Birmingham 2, Alabama

DIESEL GENERATORS

AGSCO
engineered

One of Our 1000 KW Diesel Generator Units



Unit Capacities

100-1000 KW

A.C. 50-60 Cycles

D.C. IN STANDARD AND SPECIAL VOLTAGES

IMMEDIATE DELIVERY

ENGINEERED
AGSCO
DIESEL POWER

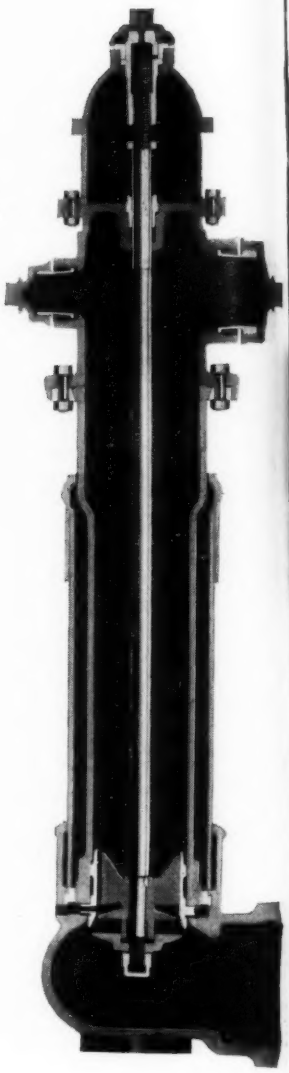
Business Established 1898

Write for Bulletin

AG SCHOONMAKER CO., INC.

50 CHURCH STREET — **NEW YORK 7, N. Y.**

CABLE ADDRESS: AGSCOMACH — **PHONE: DIGBY 9-4350**



Once set, a Mathews Hydrant need never be dug up. All repairs can be done *above ground*—where they can be done fast and economically.

That's because a Mathews consists of these major parts: (1) a removable barrel containing the working parts; (2) an elbow into which the barrel is screwed; (3) a protection case. If repairs are needed, let's say from a traffic accident, the barrel is withdrawn through the protection case, and a spare put in its place. No breaking of the pavement, no digging. The barrel is repaired in the shop and held as a spare. Labor costs are low. And (this can be very important!) the hydrant is back on duty in a few minutes.

Give *your* community the extra protection of Mathews Hydrants, first choice the world over for more than 75 years.

OTHER FEATURES OF MATHEWS LEADERSHIP

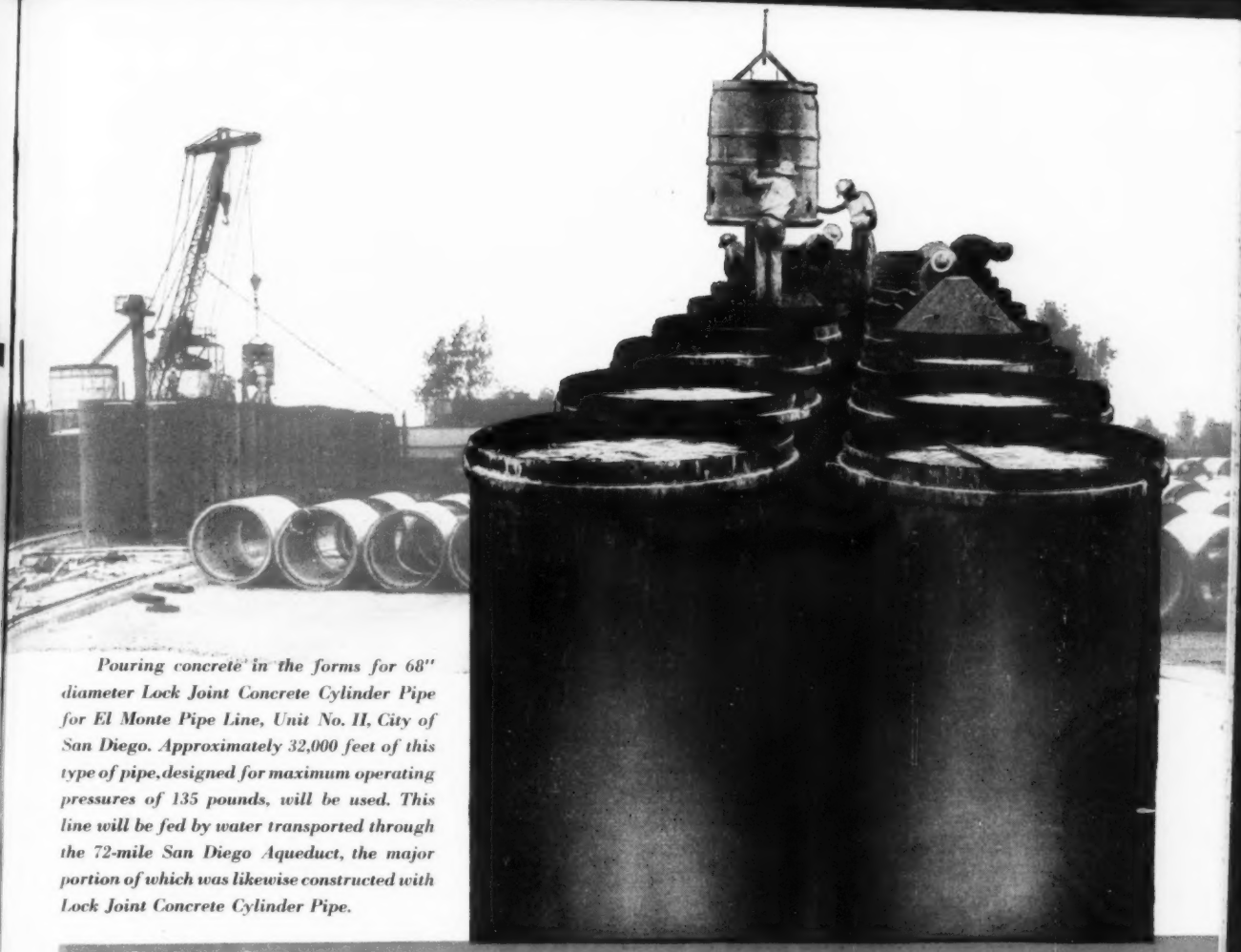
Head can be rotated a full circle, on swivel flange • Replaceable head permits change in nozzle outlets • Nozzle levels can be raised or lowered without excavating • True compression-type main valve • Operating thread (easily accessible) is only part that needs oiling • A modern barrel makes even the oldest Mathews good as new.

MATHEWS HYDRANTS

Made by **R. D. WOOD COMPANY**

PUBLIC LEDGER BUILDING, INDEPENDENCE SQUARE, PHILADELPHIA 5, PA.

MANUFACTURERS OF "SAND-SPUN" PIPE (CENTRIFUGALLY CAST IN SAND MOLDS) AND R. D. WOOD GATE VALVES



Pouring concrete in the forms for 68" diameter Lock Joint Concrete Cylinder Pipe for El Monte Pipe Line, Unit No. II, City of San Diego. Approximately 32,000 feet of this type of pipe, designed for maximum operating pressures of 135 pounds, will be used. This line will be fed by water transported through the 72-mile San Diego Aqueduct, the major portion of which was likewise constructed with Lock Joint Concrete Cylinder Pipe.

Another step forward – IN THE 75 YEAR HISTORY OF CONCRETE CYLINDER PIPE PROGRESS

Quality Pipe Line Products Manufactured and Installed by American Include:

Lock Joint Concrete Cylinder Pipe

Prestressed Lock Joint Concrete Cylinder Pipe

American Concrete Cylinder Pipe

Centrifugal Concrete Pressure Pipe

Main Office and Plant —
4635 Firestone Blvd.
South Gate, California

District Offices and Plants —
Oakland • San Diego
Portland, Oregon

One of the first important concrete cylinder pipe line installations in this country was a main water supply line for the City of Portland, Maine. Installed during the years 1868 to 1878, it was comprised of 154,000 feet of 20", 24" and 26" light gauge riveted iron cylinder pipe coated inside and out with natural cement concrete. Some 60 years later this old line was still in service when the need for a system of greater capacity was met by a new 48" line of Lock Joint Concrete Cylinder Pipe. Between the years 1868 and 1947, concrete cylinder pipe has become the foremost main water supply line material in the United States.

This El Monte pipe line is just another in the long series of successful concrete cylinder pipe lines which have been installed in recent years in this and other areas.

This company has enjoyed a wide experience in the field of water supply line engineering and construction over a long period of years and this experience and training are available to water works officials and engineers. Information available upon request.

American PIPE & CONSTRUCTION COMPANY

Concrete Pipe for Main Water Supply Lines, Storm & Sanitary Sewers, Subaqueous Pipe Lines

P. O. Box 3428, Terminal Annex, Los Angeles 54, California

MANAGEMENT INFORMATION SERVICE

Mr. Mayor or Manager:

Inaugurated late in 1945, this Service is now being used regularly by over 300 cities. It will enable you to receive immediate expert advice and reports on management problems in your town or city.

How It Works

You write, wire, or telephone for information on what is considered best practice in handling a specific municipal problem, what other cities are doing about it, what the trend is, etc. Over the past three decades ICMA has collected on a nationwide basis a vast amount of information which it now makes available to all cities on a subscription basis.

It Also Includes

1. **In addition to replies on specific inquiries, subscribing cities receive from one to 12 subscriptions (depending on size of the city) to the monthly journal *Public Management* published since 1919, and devoted to the improvement of municipal administration.**

2. **Cities also receive from one to 10 copies of the 1947 *Municipal Year Book*, the authoritative resume of the activities and statistical data for more than 2,000 American cities, published since 1934.**

3. **One copy each of special information reports issued monthly. Partial list of recent reports:**

How to Codify Municipal Ordinances
Rules of Order for City Councils
Trend Toward One-Man Police Cars
Granting Sick Leave With Pay
How to Reduce Insurance Costs
Management of Motor Equipment
Procedure in Establishing Merit System
Personnel Rules and Regulations
Water Charges Outside the City
Improving Handling of Traffic Violations.

Cities Using It

Over 300 cities in 40 states ranging in size from 1,000 to 400,000 have subscribed to this Service. The number of subscribing cities in selected states are:

California	26 cities	Kansas	12 cities	Ohio	10 cities
Colorado	5 "	Maine	12 "	Texas	30 "
Florida	24 "	Michigan	34 "	Virginia	17 "
Georgia	12 "	Missouri	9 "	Wisconsin	11 "
Illinois	9 "	North Carolina	8 "	Canada	10 "

What It Costs

MIS is available to all cities and towns on a subscription basis regardless of form of government. The fee varies with the size of the city from $20 for under 5,000 population to $400 for cities of 250,000 to 500,000. For more details write:

INTERNATIONAL CITY MANAGERS' ASSOCIATION
1313 East 60th Street **Chicago 37, Illinois**

AGAIN THIS WINTER MORE FWDs MOVING MORE SNOW

When an FWD-powered plow busts into a snow bank, it has the driving-force to go through because it has FWD power and traction on all wheels. With all types of snowplows, FWD four-wheel-drive trucks have proved their value in snow removal, opening streets and highways fast, keeping them open for traffic that must be kept moving.

On many other tough jobs of highway maintenance, FWDs are just as outstanding as they are in snow-fighting. For dependable, all-season, heavy-duty truck service, see your nearest FWD distributor, or write to

THE FOUR WHEEL DRIVE AUTO CO.
Clintonville, Wisconsin
Canadian Factory: Kitchener, Ontario
WORLD-WIDE SALES and SERVICE

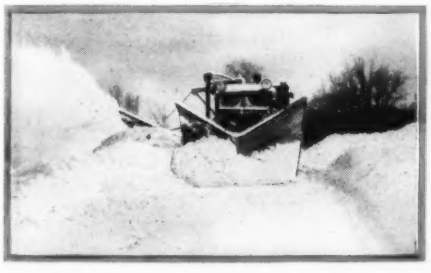


Photo above: FWD Model M7, with snow plow • Photo at left: With 400 miles of road to clear in Michigan's worst snow belt, this FWD Model SU plowed snow all winter . . . more than 100 inches snowfall, officially, up to March 1, for the 1946-47 winter!

America's Foremost Heavy-Duty Truck

VITRIFIED CLAY PIPE SOLVES LOS ANGELES ABRASION PROBLEM

43,715 FEET OF VITRIFIED CLAY PIPE are going into new sanitary lines for 183 acres of residential area in the Pacific Palisades Sewer District of Los Angeles. Standard-Strength Clay Pipe is being used generally and Extra-Strength Clay Pipe wherever needed to resist extra-heavy loads of deep trenches. This project is supervised by Lloyd Aldrich, City Engineer. Like countless other cities, Los Angeles has been specifying dependable Clay Pipe for many years.

LATEST SANITARY SEWER CONSTRUCTION in the Pacific Palisades District of Los Angeles is on such a steep grade that it challenged engineering ingenuity. Think of the abrasion in sewer lines that drop down slopes *as steep as 122%!* Not just another 8 miles of Vitrified Clay Pipe, this line drops down from high bench land to a collecting sewer in Las Pulgas Canyon, creating a high-velocity abrasive flow that only a material thoroughly fused and hardened by fire (vitrified) could withstand.

Experienced engineers realize that the pipe is a small item of cost in the original sewerage installation, but the prime factor in the life of the job and its true ultimate cost. That's why Vitrified Clay Pipe saves tax-payers thousands of dollars; especially where sewage and soil conditions ordinarily cause corrosion, rusting or disintegration and quick failure. Vitrified Clay Pipe can't rust, corrode or decompose. It withstands abrasion. It *never* wears out!

Write for information on *your* Clay Pipe problem.

NATIONAL CLAY PIPE MANUFACTURERS, INC.

111 W. Washington St., Chicago 2, Ill.
522 First National Bank Bldg., Atlanta 3, Ga.
1105 Huntington Bank Bldg., Columbus 15, Ohio
703 Ninth and Hill Bldg., Los Angeles 15, Calif.

CLAY PIPE

C-447-2

WORTHINGTON PARK RANGER

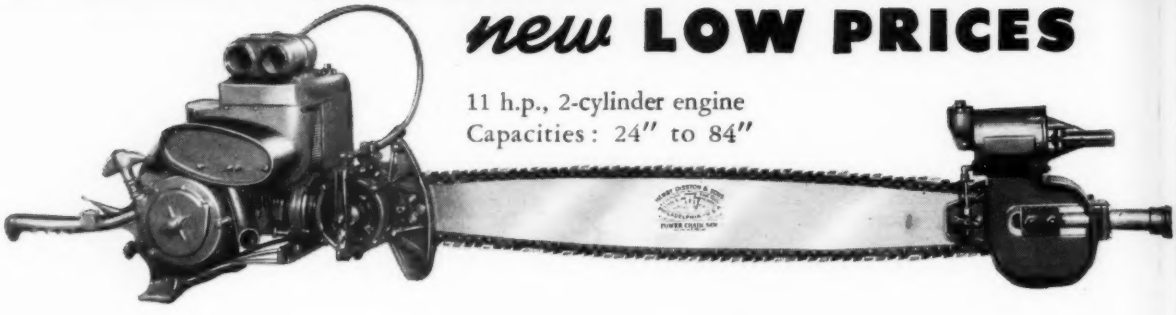
Hitch the Worthington Park Ranger to a Worthington Chief or any proper sized wheel tractor and it will mow at speeds up to 20 m.p.h. It has proved highly efficient for mowing parks, road approaches, highway shoulders, intersections, divided "island" stretches — any large scale municipal grass-cutting job. For rapid transportation up to 45 m.p.h. the Park Ranger has its own hydraulically operated transport wheels controlled from the driver's seat . . . an outstanding time saving factor particularly on widely separated lawn areas.

Notice how close the Park Ranger cuts to obstructions, leaving little to be trimmed around trees, shrubbery, flower beds, etc.

Equipped with three cutting units of the famous Grass Blitzer type, the Park Ranger has a 7-foot wide cutting swath. It is precision built from the finest steels for dependable, low cost service. For full details, see your Worthington dealer or write us direct at Stroudsburg.

WORTHINGTON MOWER COMPANY
STROUDSBURG, PENNSYLVANIA
SUBSIDIARY OF JACOBSEN MANUFACTURING COMPANY, RACINE, WISCONSIN

DISSTON CHAIN SAW
with Mercury Gasoline Engine



new LOW PRICES

11 h.p., 2-cylinder engine
Capacities: 24" to 84"

The Disston Chain Saw is the fastest, timber-cutting, portable saw ever made. It is ruggedly built, light in weight, easy to operate, and cuts from all angles. And its numerous exclusive features combine to make it the most dependable, economical and durable chain saw ever made.

Among these features are an 11 h.p., 2-cylinder engine; a positive-acting, non-slip, multiple-disc clutch; a detachable air cleaner which keeps dust from carburetor; die-cast engine cylinders and cooling fan; gear driven magneto; fuel filter built in tank; a tough, cutting chain of Disston Steel which maintains perfect contact with drive sprocket under all load conditions.

The Disston Chain Saw is a product of Disston saw-making skill and dependability. It's a typical example of the economy of Disston quality. Thousands are now in use on operations of many kinds—in the forests; on railroad contracting, and tree service jobs; at shipyards and manufacturing plants—wherever there are heavy timbers to cut.

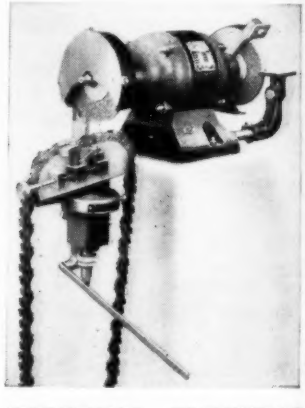
DISSTON CHAIN SAW
PNEUMATIC

HUNDREDS OF APPLICATIONS

A powerful, light weight, air-driven saw that is speeding up timber cutting and reducing costs for general contractors, railroads, shipyards, and many other users. It requires no previous experience to operate and can be used in all climates and weathers . . . even under water.

Gear housing and saw mechanism may be rotated in either direction for vertical or horizontal cutting. Equipped with heavy-duty, vane-type motor specially engineered and produced by Chicago Pneumatic Tool Company for use on Disston Chain Saws. Requires little maintenance as it is built for long, economical service.

3½ and 5 h.p. motors in 24" and 36" sizes. The 3½ h.p. motor requires 90 cu. ft. of air per minute, the 5 h.p. motor, 150 cu. ft., each at 90 lbs. pressure per sq. in.



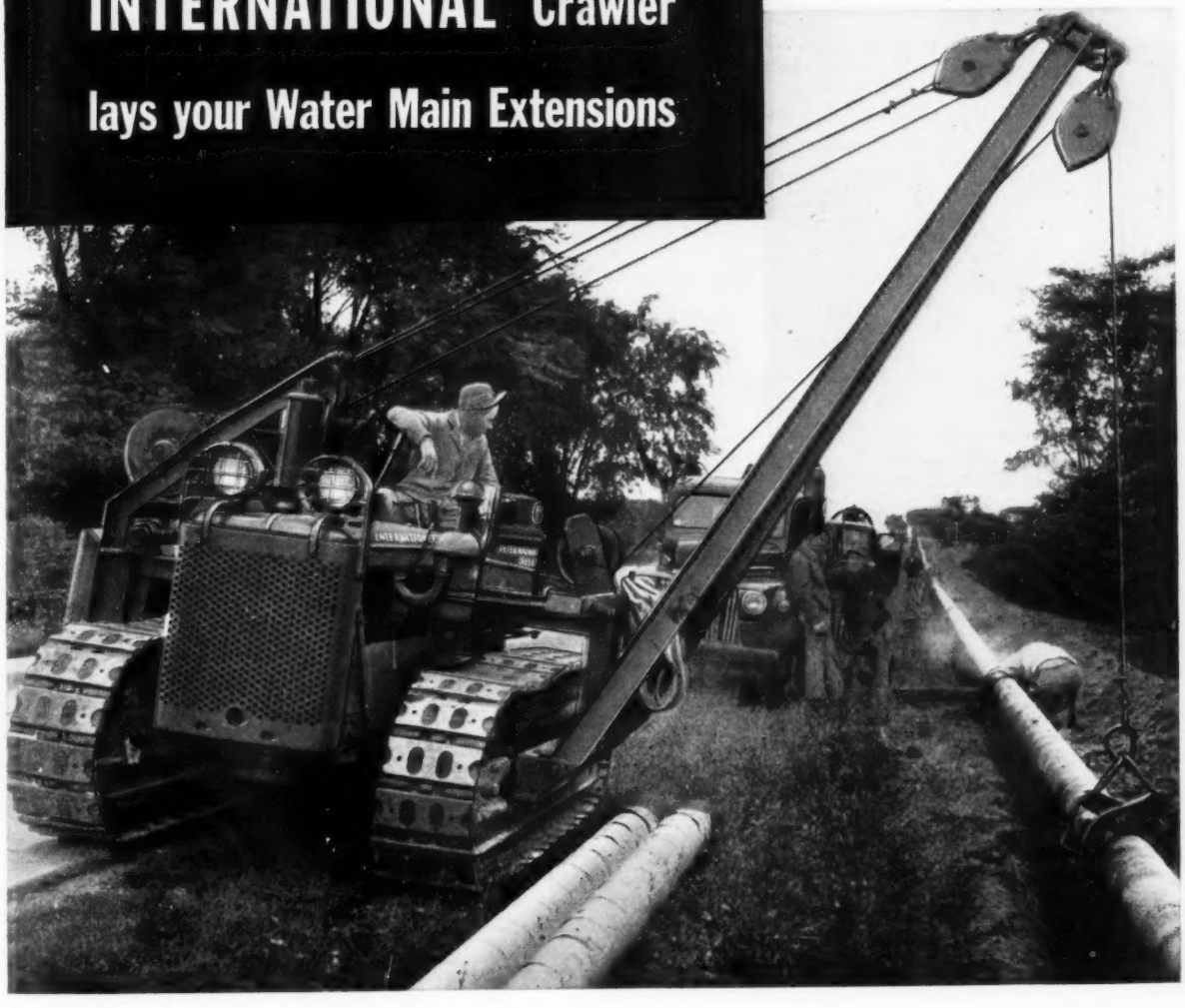
DISSTON ELECTRIC CHAIN SAW SHARPENER

Enables you to do your own sharpening . . . quickly, easily, accurately. Keeps chains in first class condition.

Write for full particulars, or see your Disston Distributor, who carries complete stocks of parts and is prepared to render prompt and expert service.

HENRY DISSTON & SONS, INC., 1165 Tacony, Philadelphia 35, Pa., U.S.A.

"It's a Pipe"—when an INTERNATIONAL Crawler lays your Water Main Extensions



This water main extension job, reminiscent of the vast pipeline building projects which International Diesel Crawlers serve throughout the country, is a "pipe" because of International power!

Here, an International TD-9 Diesel, equipped with a matched side-boom, carries and holds for welding an 8-inch, double-coated water main for a 20-mile installation. Later it will assist in lowering the pipe into the trench.

Contractors who use Internationals know that here is power that meets their needs completely, power that's balanced to tractor weight and size—a crawler that stands up and delivers under the most punishing work.

For tractors and equipment required for your earth-moving, materials handling and other jobs, consult the International Industrial Power Distributor in or near your community.

Industrial Power Division

INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue Chicago 1, Illinois

INTERNATIONAL POWER

CRAWLER AND WHEEL TRACTORS · DIESEL ENGINES · POWER UNITS

How to cut SEWAGE DISPOSAL COSTS with *Transite Sewer Pipe*

Reduced Treatment Costs

Two features of Transite* Sewer Pipe present an opportunity for important savings in the treatment of sewage:

1. Sleeve-type joints that make up tight and *stay* tight in service.

2. Long 13-foot lengths that mean fewer joints in the finished line.

This double safeguard against infiltration—*tighter* joints as well as *fewer* joints—has the practical effect of reducing the load at the disposal plant . . . often to the extent that overall treatment costs are substantially cut.

This reduction in sewage load also enables plant capacity to be conserved for future needs. And, where new treatment facilities are being planned, it permits consideration of a smaller plant . . . with possible economies in both buildings and equipment.

Transite offers other economies, too. Other important savings are possible with this pipe because it has an exceptionally smooth interior which offers minimum resistance to the flow of sewage. Its flow capacity is unusually high—n=.010. This often permits use of flatter grades and shallower trenches—with correspondingly lower excavation costs. Or, as an alternate economy, smaller diameter pipe may be used.

Low maintenance through the years. Made of asbestos and cement combined into a homogeneous material of great stability, Transite Sewer Pipe is corrosion-resistant. Tight joints safeguard against root trouble. And every Transite length is factory-tested for strength and uniformity. This adds up to low annual maintenance costs through the years.

For Further Information. If you are seeking ways to lower sewage disposal costs, send for the Transite Sewer Pipe brochure. Write Johns-Manville, Box 290, New York 16, N. Y., for your copy.

*Reg. U. S. Pat. Off.

Johns-Manville

JOHNS-MANVILLE JM PRODUCTS

Transite Sewer Pipe

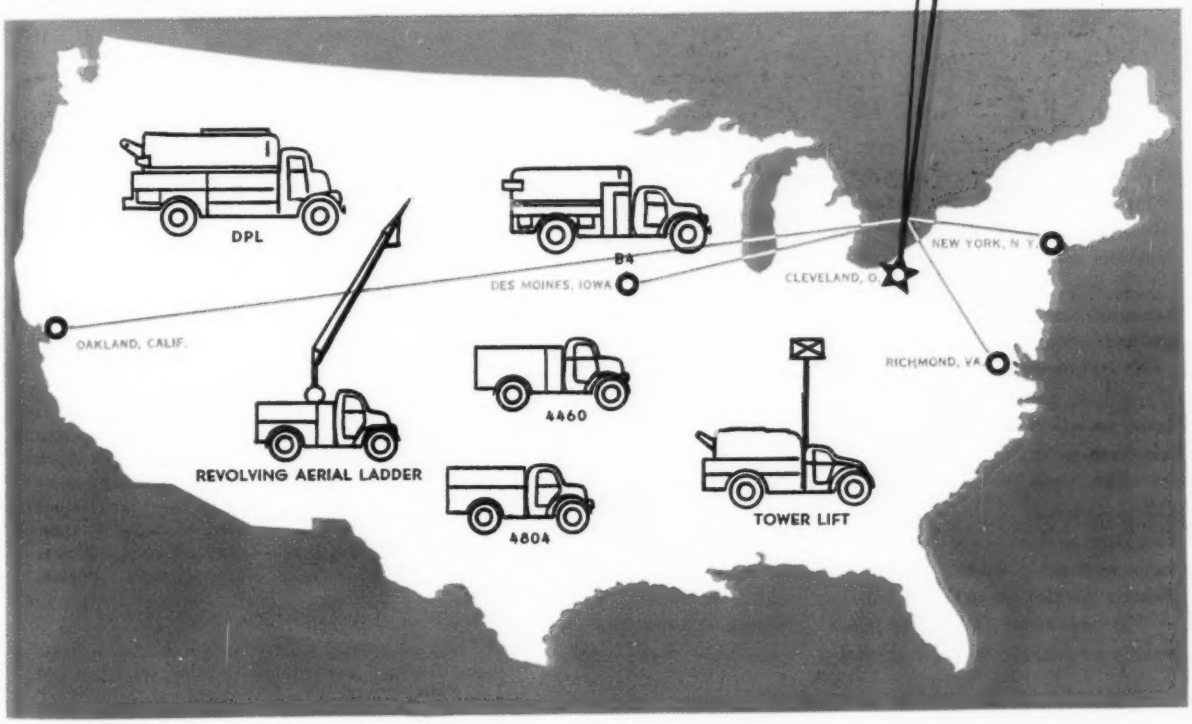
in all parts of the country

AT YOUR SERVICE

● To improve our service to you, The American Coach & Body Company has established sales offices in Des Moines and New York; sales and assembly plants in Oakland and Richmond.

● When you need information on American bodies, ladders or Tower Lift, you can save time by addressing the nearest office to you.

Write for factual literature on American bodies, ladders, or Tower Lift. Sent promptly upon request.



ACB and

THE *American* COACH and BODY COMPANY

9503 WOODLAND AVE., CLEVELAND 4, OHIO

SALES and ASSEMBLY THE AMERICAN COACH AND BODY CO OF CALIF., 432 FIFTH ST., OAKLAND 7, CALIF
BAKER EQUIPMENT ENGINEERING CO., SUMMIT & NORFOLK STS., RICHMOND 11, VA

OFFICES 350 MADISON AVE., NEW YORK 17 N Y
INSURANCE EXCHANGE BLDG., DES MOINES 9, IOWA

A PROFIT OPPORTUNITY FOR SANITARY SERVICE OPERATORS

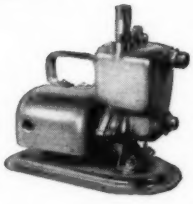
Here is important information for both community officials and sanitary service operators. It's the new Odorless Sanitary Cleaner, a complete self-contained mobile unit engineered especially for cleaning septic tanks, cisterns and vaults.

It eliminates all the disagreeable and unsanitary aspects of the job. It cuts to a small fraction the time required with old fashioned and makeshift equipment. (500 gal. septic tanks can be cleaned in 15 minutes). Operators can greatly improve working conditions, conform to all Board of Health regulations and materially increase profits.

The unit is equipped with a powerful, centrifugal Gorman-Rupp sewage pump that is completely non-clogging and self-priming. It is provided complete with tank and all fittings ready to mount on standard truck chassis of 158 to 161 inches.

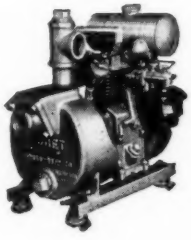
It represents an exceptional business opportunity in your community and no previous experience is required.

Write for complete information and literature



"HANDY" PUMP

An extremely useful and dependable pump that weighs only 20 lbs. Fitted with pipe or common garden hose it will lift up to 25 ft. and deliver 8 GPM at 40 lbs. pressure. Self - priming, electric motor driven.



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Weighs only 60 lbs. yet pumps 3000 GPH at 20 ft. head, more than any other pump of the same weight Self-priming, husky. Trouble-free service.

Gorman-Rupp makes a complete line of self-priming centrifugal pumps ranging in capacity up to 125,000 GPH. Simplicity of design provides efficient, long and trouble-free service. A size and capacity to handle any pumping requirement.

THE GORMAN-RUPP COMPANY

Gorman-Rupp Pumps — Unsurpassed for Pumping Fast

343 N. Bowman St., Mansfield, Ohio

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The MACK Box-Girder Cross-Member

Mack fire apparatus *stay new* longer because they are built with extra strength and stamina in every part. Typical of Mack quality construction is the exclusive box-girder cross-member. Designed by Mack engineers and found only on Macks, it has proven the best all-around cross-member ever designed. It helps impart the exceptional strength and rigidity for which Mack fire apparatus frames are renowned . . . qualities that enable every Mack to maintain peak performance under hardest service. Over 1,000 departments have found that they get greater performance *out* of Macks because we build greater performance *into* them. For the finest in fire apparatus, Modernize with MACKS!

Recently delivered to the City of Visalia, California, is this Mack Type 95, 1,000 - gallon Triple Combination Pumper.

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Fire Apparatus Division
MACK MANUFACTURING CORPORATION
LONG ISLAND CITY 1, NEW YORK
Factory branches for parts and service in all principal cities. In Canada, Mack Trucks of Canada, Ltd.

TRIPLE COMBINATION PUMPERS — 500 TO 1250 GALLONS . . . SQUAD WAGONS . . . CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

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▶▶▶PIPE LINING FACTS NO. 4

The Centriline process is extremely flexible in providing linings of variable thickness in accordance with the degree of protection necessary. The thickness of the lining is controlled in inverse proportion to the forward speed of the Centrifugal machine. Thus, when cleaning reveals sections of a main particularly affected by electrolysis or corrosion and strengthening is desirable, an increase in thickness is obtained by slowing the speed of the machine.

No matter what plate thickness or plate conditions are encountered—serious deterioration and penetration included—the flexibility of the Centriline Process restores capacity to better than new and vastly increases the life expectancy of the pipeline.

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CENTRILINE CORPORATION

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CEMENT MORTAR LININGS FOR WATER MAINS

Centrifugally Applied

In Strict Conformity with A. W. W. A. Specifications

STREAMLINE COPPER PIPE IS THE IDEAL MATERIAL FOR UNDERGROUND SERVICE LINES — No Upkeep and Costly Repairs

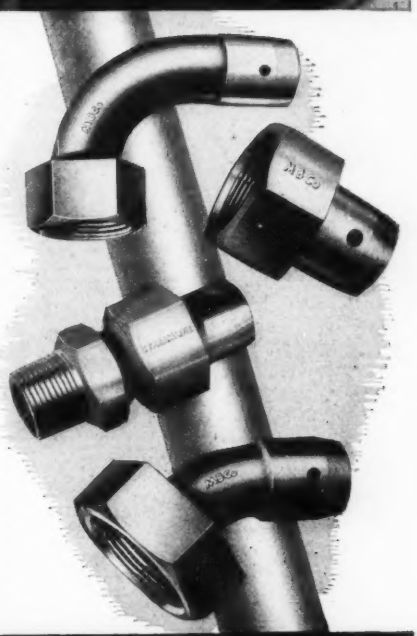
A STREAMLINE Copper Service Pipe installation is practically vibration proof, settlement of filled earth, water mains, or buildings have little or no effect upon it. Its quality of ductility permits sufficient stretch to take care of a condition of this kind without injury or failure of the pipe.

STREAMLINE Service Pipe (Type K) is the most uniformly soft and pliable pipe possible to secure—it is kept that way through the use of the best copper obtainable for the purpose and through strict laboratory control through every phase of its manufacture.

Copper does not rust or scale, thus insuring a maximum delivery and eliminating many costly water meter repairs and insuring the accuracy and long life of meter discs and chambers.

When STREAMLINE Copper Pipe is installed as a service line, it can practically be forgotten for years to come. It insures a lifetime, trouble-free piping system that, with the possible exception of abnormal earth or water conditions, need never be replaced.

WITH COPPER AND BRONZE TIME STANDS STILL



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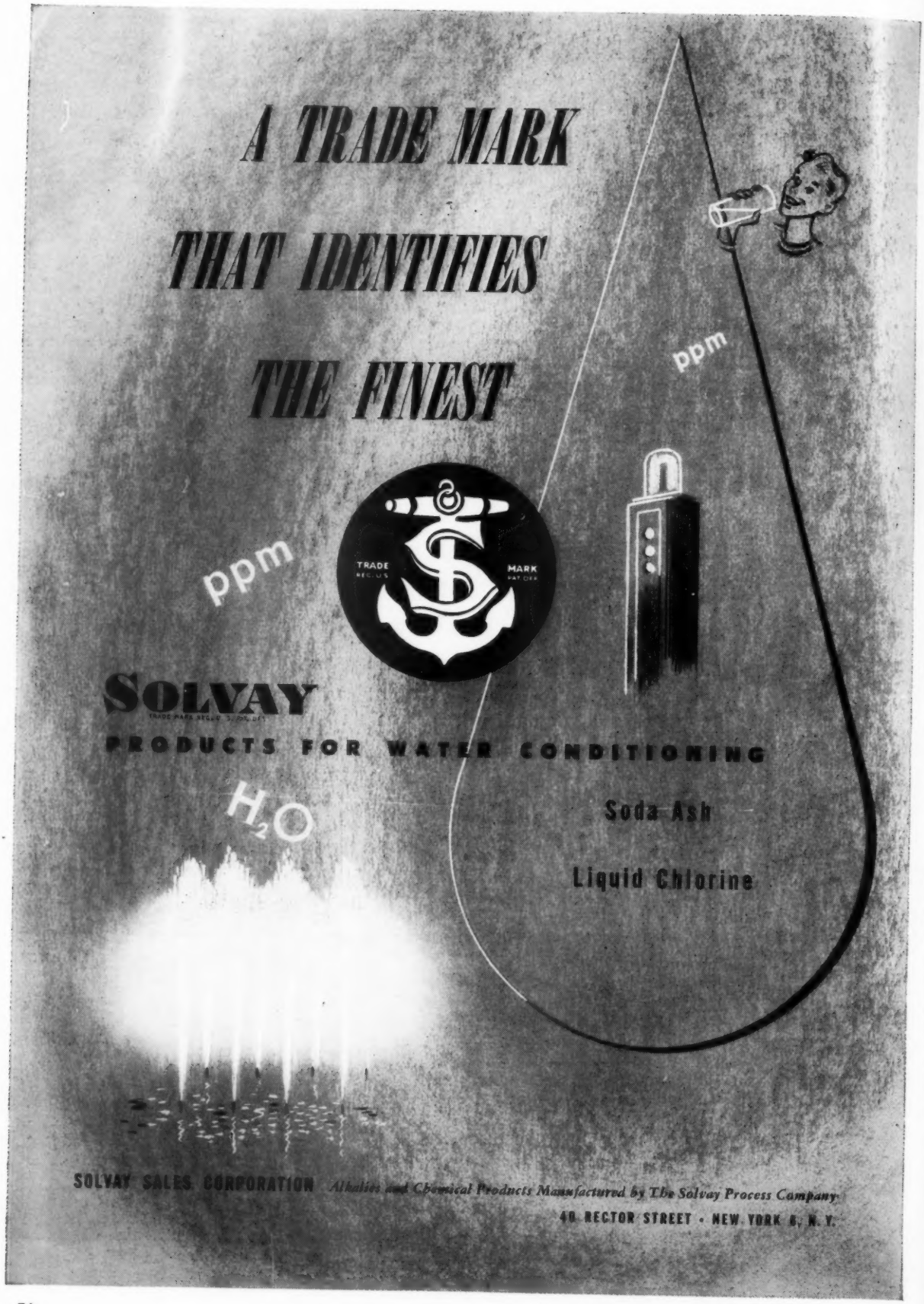
PIPE AND FITTINGS DIVISION
MUELLER BRASS CO.
PORT HURON, MICHIGAN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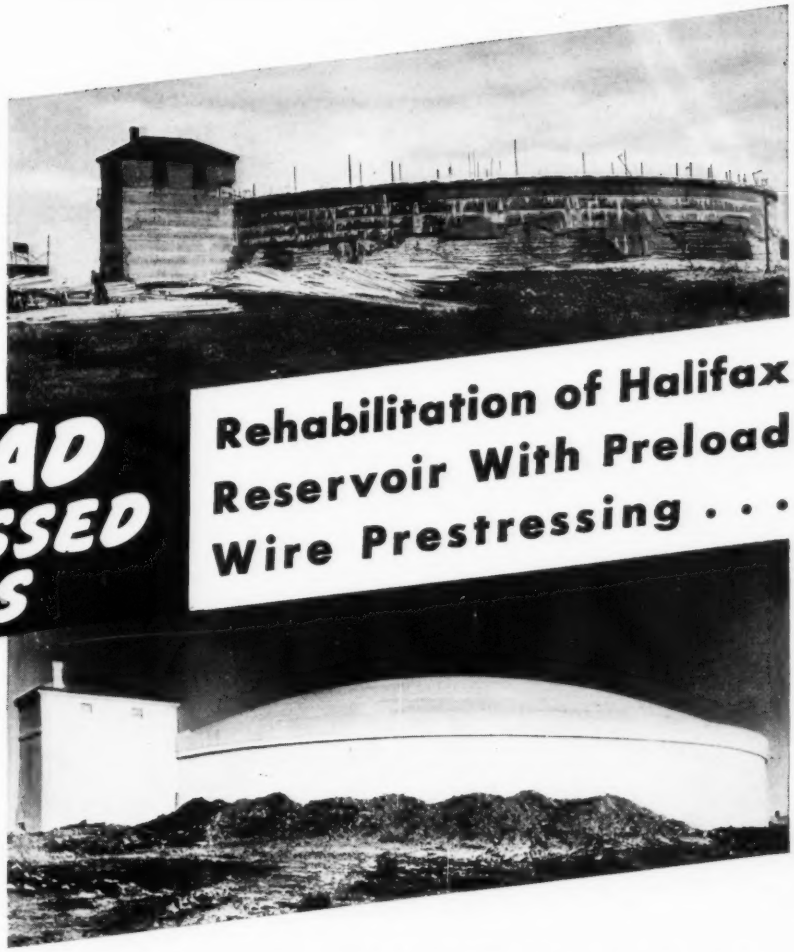

Halifax, N. S. reservoir before rehabilitation.

PRELOAD PRESTRESSED DOMES

Rehabilitation of Halifax Reservoir With Preload Wire Prestressing . . .

Reservoir after rehabilitation, showing Preload Prestressed Dome.

Reconstruction of the 3½ million gallon Halifax, N. S. reservoir by Preload Company of Canada Ltd. (Subsidiary of The Preload Corp. of New York) and Canada Gunite, Ltd., plus the addition of 500,000 gallons new capacity, has been carried out by the use of PRELOAD WIRE PRESTRESSING on the dome ring which carries the load of the new dome roof, the largest of its kind ever built, (164 ft. 3 in. diameter). 42 miles of 0.162" high tensile (200,000 psi.) strength wire was applied by the PRELOAD WIRE PRESTRESSING MACHINE at an initial stress of 140,000 psi. The wire was applied in five layers, each layer of wire being bonded with a coating of gunite and the entire ring being finished off with a one inch gunite cover coat. (See articles in June '47 Journal of American Water Works Association and Aug. 7, 1947 Engineering News-Record).

This reservoir, built in 1913, represented a serious problem caused by erosion and spalling due to ice action and severe winter weather conditions. The availability of materials for this type of reconstruction, (to meet an urgent time factor) and substantial economies over other methods of rehabilitation, all made it possible for PRELOAD to demonstrate the same economy and freedom from long-term maintenance costs which characterizes PRELOAD'S construction of new tanks and other circular structures.

Send for Bulletin.

THE PRELOAD COMPANIES

420 LEXINGTON AVE., NEW YORK, N. Y.

Designers and Builders of Prestressed Concrete Storage Tanks and Pressure Pipe
Prestressed Concrete Bridges and Cement Lining of Pipe in Place

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PRELOAD TRADE MARK

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San Francisco—Los Angeles

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Montreal—Toronto—Halifax

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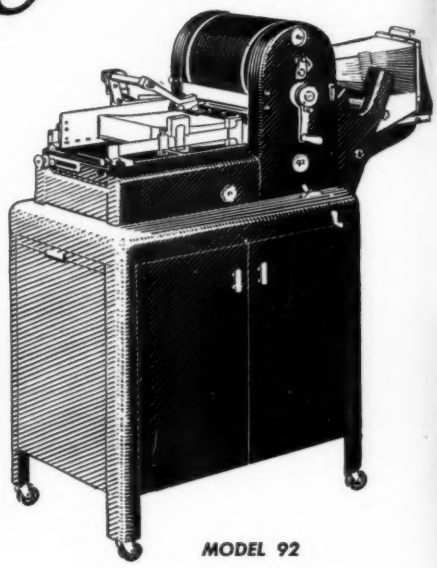
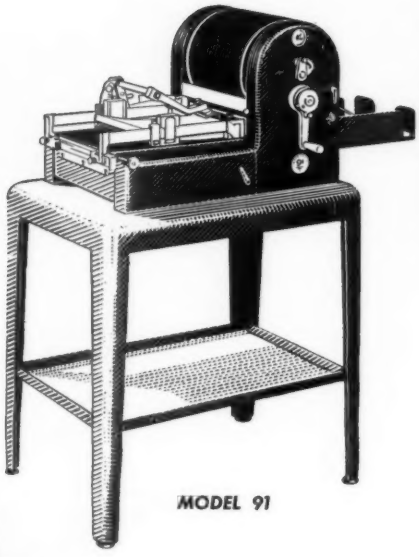
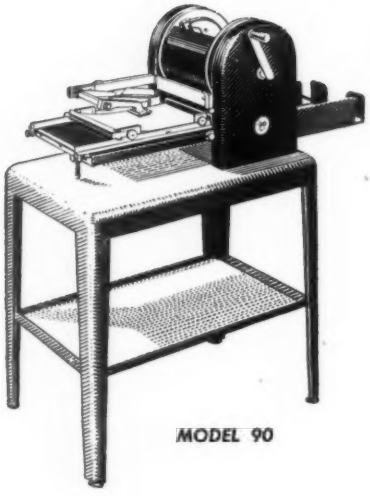


MODEL 92



MODEL 91



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Simple—your secretary or office boy can operate it. No special training required.

Versatile—letters, post cards, forms, folders . . . variety of shapes, sizes, colors . . . at lower cost for long or short runs.

Fast—always ready for use. Little preparation time. No extensive daily "cleanup" needed.

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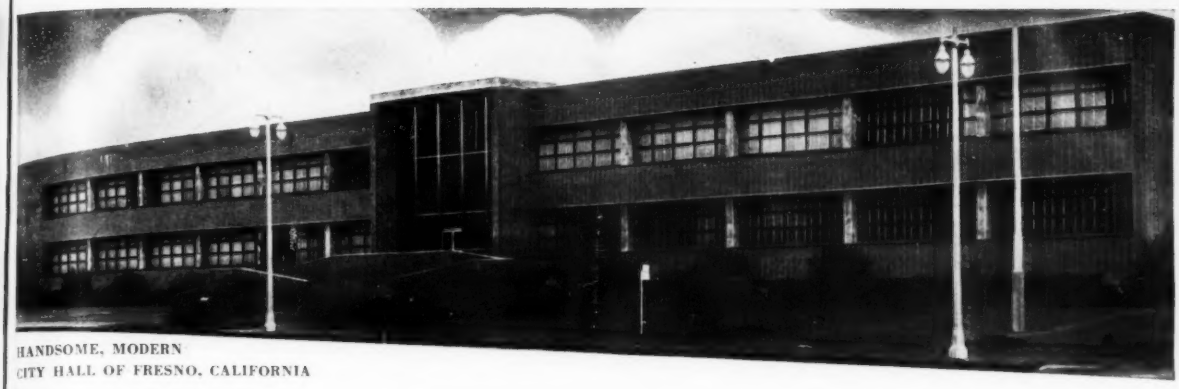


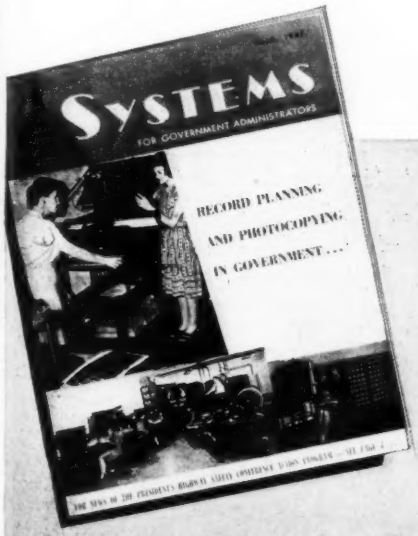
HANDSOME, MODERN
CITY HALL OF FRESNO, CALIFORNIA

How Kardex ***CUTS PAYROLL COSTS*** *for city of Fresno, California*

"We saw that Kardex was the right tool for our purpose", says A. L. Hilderbrand, Commissioner of Finance, in describing the analysis of payroll handling conducted by his office. Commissioner Hilderbrand illustrates how Kardex provides administrative review of 80 complete Payroll records locked in a single slide.

THIS progressive California community no longer maintains vertically filed *separate records* of sick leave, payroll, certification of personnel, and changes in personnel pay status. Fresno now *saves wasteful duplication of effort* by filing all personnel records in one economically operated Kardex Visible Central Information File. One third of the actual steps in posting and reference to the record were eliminated, and since there's now only one place to look, operating time is cut still further—that's how Kardex *saves!*

Each individual Kardex personnel record contains complete one-source reference information that answers any or all questions that may arise about certification of an appointee and subsequent changes in his classification and rating, salary, and deductions; his record of absences and accrued sick leave; citations or memoranda. No wonder Fresno City Finance Department officials say: "We would not consider reverting to our old habit of going several places and consulting several vertical records to get the information we need."



SYSTEMS FOR GOVERNMENT ADMINISTRATORS *For Practical Administration of Tax Revenues* **is a quarterly publication presenting methods that have made Good Government more effective by improved procedures. Replacing our** *Government Narrators,* **these special issues of the widely read** *Systems for Modern Management* **bring you news of Government records you can use, typical "case histories" of successful filing systems used in a wide variety of governmental administrative activities. Anyone in Government Service may receive** *Systems for Government Administrators* **without cost by sending mailing information to Government Systems and Methods Research Department, Systems Div., 315 Fourth Ave., New York 10.**

Remington Rand

THE FIRST NAME IN RECORD SYSTEMS

THE MARK OF SUPERIORITY IN MODERN BUSINESS MACHINES

Burroughs

THERE'S A *New Beauty* ON THE OFFICE FORCE

In clean, flowing lines and two-tone harmony, Burroughs style engineers have interpreted the inner perfection of the new Burroughs Electric Duplex Calculator . . . its ease of operation and sureness of figure control.

Here is an instrument to lift the pride and quicken the spirit of the modern business girl . . . make deft hands more deft. Here, too, is the promise of other Burroughs developments now in the making . . . of improvements and refinements that reflect the stepped-up tempo of Burroughs research in electronics, metallurgy, chemistry and styling.

Great things are going on at Burroughs . . . as this new Burroughs Calculator bears evidence. Burroughs Adding Machine Company, Detroit 32, Mich.

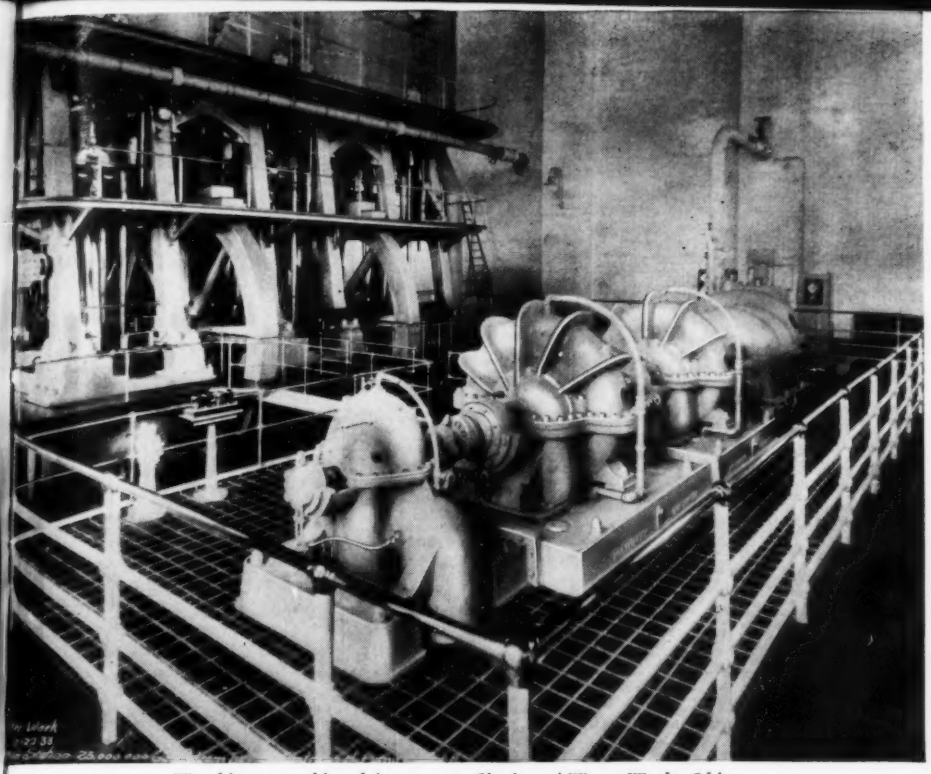
WHEREVER THERE'S BUSINESS THERE'S

Burroughs

NEWS

FROM THE PUBLIC WORKS FRONT

AS REPORTED BY THE DEVELOPMENT ENGINEERS, FIELD SERVICE REPRESENTATIVES AND CUSTOMERS OF WORTHINGTON



Worthington turbine driven pump, Cincinnati Water Works, Ohio

1 Pump—25 MGD—210 PSI Head—14 Years

The Worthington pumping unit which was installed by Cincinnati Water Works in 1934 has been operating continuously ever since with scarcely any repairs.

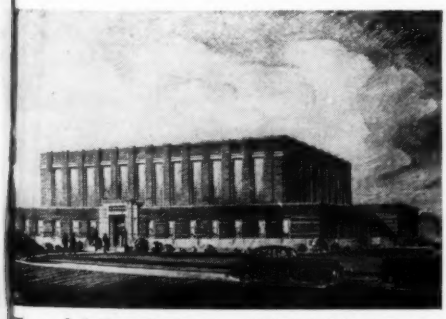
The unit has a rating of 25 million gallons per day against a total head of 470 feet TDH.

The photograph of this unit provides an interesting comparison—in the foreground, the compact 25 mgd unit referred to; in the background a massive 25 mgd Worthington vertical triple expansion reciprocating engine installed over 40 years ago. The latter is one of seven such old time Worthington units still in service at this site.

Philadelphia Gets War-Delayed Pumps

Philadelphia's Bureau of Water began its modernization program in 1941 with the awarding of a contract to Worthington for furnishing and installing new motor-driven single and two-stage centrifugal pumping units for the Torresdale Pumping Station on the Delaware River. The contract covered the following units:

Four	40 mgd, 200 ft TDH,	1750 hp
Two	20 mgd, 200 ft TDH,	900 hp
One	6 mgd, 360 ft TDH,	500 hp
Three	3 mgd, 360 ft TDH,	250 hp



Torresdale Pumping Station of Philadelphia's Bureau of Water to be equipped with Worthington pumping units.

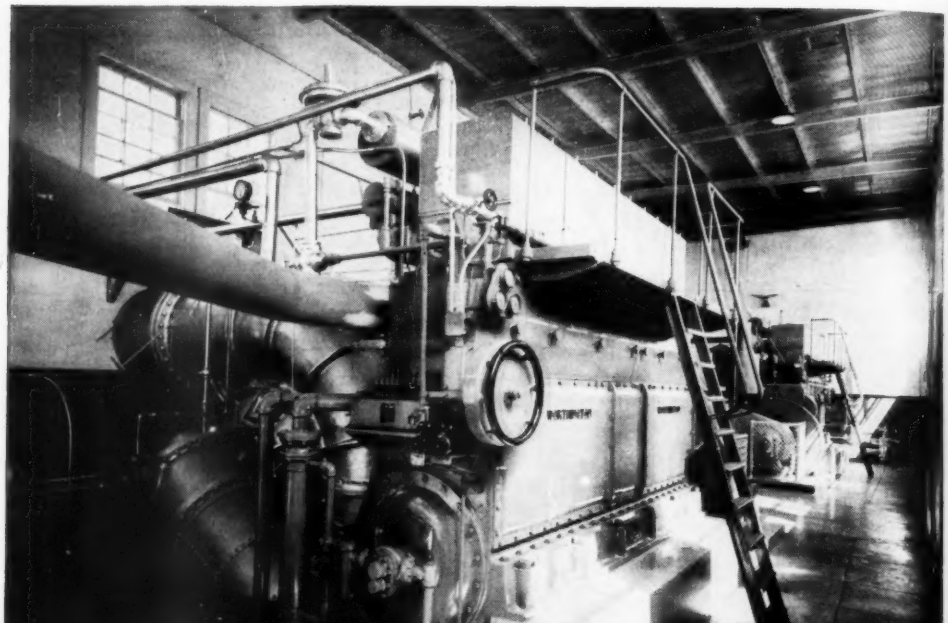
Building of the new pump house and the delivery of the pumps were delayed by the war. As a temporary measure to supply increased demand, one 6 mgd unit and two 3 mgd units were put into service in a temporary pump house.

Recently, the bureau reinstated its program with an order to Worthington for the following units to be installed in the Queen Lane Raw Water Pumping Station:

Four	40 mgd, 260 ft TDH
Two	20 mgd, 260 ft TDH

The 40 mgd units are to be driven by 2250 hp unity power factor synchronous motors, the 20 mgd units by 1250 hp motors.

NEWS from the public works front



Two Worthington 500 hp gas engines at second relift station of irrigation system located at Weslaco, Texas

Steam to Electricity to Gas— and the Same Worthington Pumps

Worthington pumps installed in 1915 and 1918 in Hidalgo and Cameron Counties' Water Control and Improvement District No. 9 relift plant north of Weslaco, Texas, have survived several transitions at the prime mover end and today are still operating, now with power supplied by Worthington gas engines.

Originally the pumps were powered by a tandem compound steam engine directly connected to the pump shaft. After several years' operation on steam, the pumps were converted to electric drive by installation of synchronous motors on the old engine shaft at the point where the flywheel had been located.

After operating for several years on electric drive, the discovery of oil and gas in the Rio Grande Valley made gas a much cheaper power source, and so gas engines and chain drives were installed, with the sprockets of the drive installed on the old engine shaft where the rotors of the electric motors had been located.

The gas engines are Worthington 500 hp vertical enclosed engines operating at 360 rpm through a silent chain drive to Worthington 45 in. horizontal double suction volute centrifugal pumps delivering 70,000 gpm against 18.5 ft TDH at 120 rpm.

The engines are equipped with air filters, exhaust silencers and a closed jacket water system. The jacket coolers consist of bare tube heat exchangers installed in the discharge canal in front of the pump outlet, and a small water softener treats the jacket makeup.

The drive is lubricated from the oiling system of the main pump bearings. This system consists of a small belted rotary oil pump delivering to an overhead oil filter and storage tank from which the oil flows by gravity to the main pump bearings and chain, and drains to the base of the oil tight chain case, whence it is picked up by the rotary pump.

A novel feature of the engine installation is a friction brake to prevent the unit from running backwards in the event the main pump discharge flap or check valve failed to function. This is a hand-operated brake applied to the flywheel rim, and on one occasion since the plant was built an accident occurred to the discharge flap gate which would have probably caused serious damage to the engine had this brake not been installed.

These Worthington units have been in service for six years and are giving excellent results.

Veterans Hospital Contractor Using Blue Brutes 100%

Worthington "Blue Brutes" are doing their part in breaking ground for the new Franklin D. Roosevelt Veterans Hospital in Crugers Park, near Peekskill, N. Y. Contracts totalling $22,400,000 have been awarded for this hospital for neuropsychiatric veterans, which will be the largest Veterans Hospital in the United States.

The first contractor to start field work on the 900 day job of transforming the 383 acre site into a medical center was the Mt. Vernon Contracting Corporation of Mt. Vernon, New York, which has a $3,000,000 sub-contract for excavating, grading and other remodeling of the topography. The Mount Vernon Contracting Corporation is sub-contractor for Merritt, Chapman & Scott of New York City, and Fred J. Brotherton, Inc., of Hackensack, N. J., who have been awarded contracts for the major portion of the project.

The Mount Vernon Contracting Corporation is using 100% Worthington "Blue Brute" equipment on its rock excavation job. At the present time, there are nine 500-ft Diesel Portable Compressors, two 315-ft Diesel Portable Compressors, fourteen Wagon Drills, and eighteen Hand Held Rock Drills in operation.

Views of Worthington "Blue Brute" Compressors and Drills at site of Franklin D. Roosevelt Veterans Hospital

7-15

Worthington Pump and Machinery Corporation

•

Harrison, N. J.

Can this be why

"It is our belief that the great amount of the loss is accounted for in inefficient registration of the meters, because the meters that were in service for so many years, when brought into the shop and tested before repairing, gave a very inefficient registration at one gpm whereas the new meters give us excellent results at 1/8 gpm."

From an article in Water Works Engineering by Mr. Carl Duy, Engineer of Water Works, Aurora, Ill.

YOU MAY BE WASTING WATER AND LOSING REVENUE?

THIS thought from the report of a City that made and saved $21,000 in 15 months by testing, repairing and replacing old water meters, should make YOU think! It indicates the importance of bringing in old meters for testing and repairing them or installing new meters to register at low flows . . . (at least 90% at ¼ gpm is what any repaired domestic meter should register).

● *YOUR TRIDENT REPRESENTATIVE will help you install an efficient and economical program of meter testing and repair to help offset the difference between your fixed rate and rising operating costs. There will be no obligation on your part. The Trident man is a helpful man to know. Contact him!*

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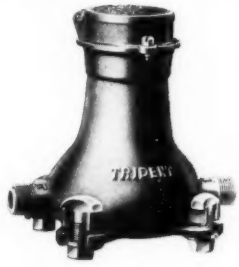
NEPTUNE METERS, LTD., Long Branch, Ont., Canada

Trident WATER METERS



Tridents are simple, rugged and retain their high initial accuracy over many years of operation. After many years on the line, new interchangeable parts will fit the old casing, make them "better than when new," at small expense. Trident meters can be easily repaired to register 90% accurate at ¼ gpm, the minimum acceptable performance for domestic meters.

Volume LXII Number 11
NOVEMBER 1947
The American City

Play's the Thing Again

NEWARK EVENING NEWS PHOTO

Sinking pilings for a boat dock at Weequahic Park Lake in Essex County, N. J.

By RONALD D. CRATER
Chief Engineer
Essex County Park Commission
Newark, N. J.

The oldest county park commission in the United States works for the benefit of 22 New Jersey municipalities

WHATEVER the month, it's springtime in the Essex County Park Commission, for tools and labor are becoming available again with which to recreate and improve the service of our 18 parks and 2 reservations for the well-being of 22 New Jersey municipalities and their visitors. The Commission, established in 1895, is an example of constructive paternalism. Each of the contiguous communities, whose frontiers are indistinguishable except to officials and historically minded citizens, has its Park Department and Shade Tree Commission. They minister to the myriad trees and park areas of each autonomy. The operations of the County Commission in nowise interfere with these local activities, but they do lift many burdens which otherwise would have to be carried locally.

Eight of the county parks are in two or more municipalities. One of the reservations includes parts of Milburn, South Orange, Maplewood, and West Orange. It comprises 2,053 acres, and from it New York's buildings are visible. The other includes areas of West Orange, Verona, and Montclair and also provides a commanding view of the country. It has 408 acres. There are three county parkways extending 8.79 miles. A full inspection of all the parks requires a 75-mile tour.

The feeling of springtime is enhanced also by the large attendance at games, concerts, and shows. Last year 11 parks reported ice-skating for a total of 170 days and an attendance of 266,745. On the hills and dales where 28,830 persons coasted and skied, the summer found 16,663 picnicking. The 35 miles of bridle trails shuffled to the beat of hoofs beneath 114,364 horseback riders. Hard-surface tennis courts in 8 parks were used by 66,607 players. The two golf courses entertained 117,459 rounds. All these sports and pleasures are conducted by the Recreation Department, headed by the Commission's executive secretary, Kenneth V. C. Wallace.

Providing the Scenery

Just a little way back of the participants is the ceaseless but friendly work of providing the lawns, the flowers, the shrubs, and the trees. Valued at $8,257, 25,330 plants were produced at the greenhouses, and 5,726 shrubs and 546 trees were planted. Shortages of fertilizer materials confined this operation to the golf turf and bowling greens, but 226 tons of pulverized limestone were applied to three of the parks.

Fifty-four elms were taken down, while experimental work went on in the

Left: The truck crane excavating 2000 cubic yards at Verona Lake Park. Right: Replacing trees on Westside Esplanade.

United States Department of Agriculture in New Jersey. Results indicated the use of DDT on elm trees this year. The loss of one tree on Oraton Parkway North and four in Orange Park had a serious effect on the landscape. For controlling weeds in turf areas, it was found that 2-4,D is extremely effective and will eliminate broad-leaved weed plants by overstimulation.

Maintaining the Stage Itself

Back of the essential activities of planting and nurturing are found the maintenance and construction forces. Shortages have delayed the prosecution of large-scale construction projects, and our present work is rehabilitation and replacement. The illustration shows one such project at Weequahic Lake in the 160-acre park of the same name. The job is the construction of a 300-foot catwalk to connect with the main boathouse, which was rebuilt in 1943. The purpose is to restore boating facilities which were closed in 1942 when this park was occupied by the Atlantic Overseas Air Service Command, whose job was to supervise the Newark Airport. Quarters consisted of 152 buildings which are being converted to housing for the families of 346 veterans.

The Michigan truck crane is one of the busiest and most versatile of our tools. At various times its 28-foot boom manipulates a ⅜-cubic-yard Kiesler clam shell bucket or a No. 5 McKiernan-Terry hammer powered by a 225-cubic-foot Sullivan air compressor. The truck motor operates the crane that is used for the excavation of waterways and lakes, handling trees, loading onto trucks, and for erecting heavy beams and timbers for roof structures.

Another important tool is the tractor, of which there are 20, including 5 Toro Parkmasters, each equipped with 5 gang saws, a hoist, and pneumatic tires. In summer, the tractors are used for plowing and cultivating. With trailer carts attached, they are used for dump and trash pick-up. In winter they are fitted with V-blades for snow removal or with the straight-pushing-type blade for clearing ice shavings. Snow must be removed on 30 mlies of through roads.

Besides tractors, we have three truck-mounted sprayers, a John Bean and two Fitzhenry-Guptills, two Austin-Western rollers, and a Wichita "Wonder" compost grinder.

The start of each year brings the task of clearing out trees felled by storms and the removal of dead and dangerous trees. The Plymouth tractor has a power take-off for sawing wood. For all this sawing and for insurance against any more hurricanes we have purchased two Disston chain saws. The final object is to produce lumber where possible and to saw the rest into cord wood for sale. Last year's production was 3,000 board feet of lumber sawed at the East Orange water reserve and 98 cords sold to the public.

Park Police and the Commissioners

The county police have 7 automobiles, 15 Harley-Davidson motorcycles, and 3 motorboats. Last year the cars averaged 13.6 miles per gallon and the motorcycles, 21.1 miles, in covering 148.183 miles.

The parks are administered by a board of five members who serve without pay. John R. Hardin died in 1945 after 42 years as Commissioner and was succeeded by his son, Charles R. Hardin. The members are Franklin Conklin, Jr., president; Carl Egner, vice-president; Kenneth B. Gordon, treasurer, and Allison Dodd.

The same versatile Michigan Power Shovel truck crane shown in the two pictures above is pictured here setting roof trusses of Branch Brook boathouse.

How Toledo's Municipal Job Classification System Works

By GEORGE R. HEWES

PERENNIAL THREATS of work stoppages, "labor holidays," or outright strikes by city employes ended a three-year run in Toledo, Ohio, last May with the adoption of a new position-classification system.

Unique among municipal methods of adjusting a public payroll to cost-of-living indices or labor-negotiation requirements, the Toledo system was created by Ray E. Hibbs & Associates, Minneapolis management consultants.

A Distinctive Feature

The feature in which the Hibbs plan differs from systems instituted by many consultant firms for city and state governments is a "dollar factor," which, keyed to a point-credit classification structure and a cost-of-living index, controls the entire city salary budget.

This was determined in part by analysis of Toledo's fiscal position—its revenue and salary potentials. After conferences with representatives of the city employes and the city management, the consultants analyzed and rated each job with credit points from 125 to 447.

Annual salaries for each position—and the city's entire annual payroll—are determined by multiplying the number of job credit points by the dollar factor. In Toledo's case, $16.25 per point per year was established.

For example, the Hibbs formula rates a bridge mechanic's job at 202 credit points. Multiplied by the dollar factor: 202 times $16.25 gives $3,282—the annual salary of a city bridge mechanic. A street department complaint clerk, with 167 points, receives $2,713 a year.

Members of the city manager's cabinet, directors of law, finance, welfare, public service or public safety were rated at 405 points and are paid $6,681 annually. By the same method, a total of 409,135 points are set for all city positions. Multiplied by the dollar factor, this shows an annual payroll of $6,648,443.75 for Toledo's 2,239 employes.

A formal approach is used to determine the individual job ratings. From 11 to 14 factors—such as experience, education, skill, hazard, or other requirements of the job—are considered, preliminary points are established, and the tentative ratings are reviewed before a committee of union or other employe representatives and management officials. From this a permanent job evaluation is established.

George N. Schoonmaker, Toledo's city manager since 1939 and a 37-year man in public career service, found the Hibbs plan an answer to the most persistent labor problems of his administrative experience — rising living costs for workers governed largely by limited city revenues and civil service procedures.

Mr. Schoonmaker, in a recent interview, described the new system as "eminently satisfactory" and stressed particularly one of the circumstances that led to its inception during a threatened strike of city workers in July 1946.

"Both labor and management here agreed in advance to accept the findings of the job evaluation consultants before the survey was undertaken," Mr. Schoonmaker said, adding: "This smoothed the way for eventual acceptance by both union and administration representatives."

He recalled that he had conferred with the city managers of Dayton and Cincinnati, where classification surveys were undertaken last year, and he had learned that the governments of those cities were having some difficulties in having their job-revision systems accepted.

Another good point of the Hibbs method is the flexibility it provides for budgeting the annual payroll, City Manager Schoonmaker explained. He said a cost-of-living index can be interpreted in terms of nickels, dimes, or quarters, and any of these amounts can be reflected simultaneously throughout the entire city payroll by adding it to the dollar factor. The same flexibility serves in wage-negotiation discussions among labor representatives, and Toledo's payroll includes members of 13 unions or professional associations.

"The new system hasn't solved our labor problems 100%, but it isn't likely that any formula devised by man ever will," Mr. Schoonmaker concluded.

His point is borne out by the fact that this year, for the first time since 1944, Toledo's government has not been faced with a strike threat or walkout by municipal employes.

In 1944, Toledo's maintenance workers, nettled over classification complaints and failure to receive pay-adjustment demands, walked out in a half-day "holiday." In 1945, a strike was narrowly averted by a promise of complete classification readjustments. These failed and the Hibbs survey was instituted, in answer to a third strike threat, at the suggestion of a mediation panel from Toledo's Labor-Management-Citizen Committee last year.

On the other side of the city labor-management picture, Floyd Bossler, veteran president of Municipal Employees Union Local No. 7, American Federation of Labor, observed:

"I think this new Hibbs classification system has ironed out most of the grievances that our members have been complaining of for the past 10 years. It does establish an equitable relationship between jobs in the municipal service."

101 Reductions; 2,138 Increases

Instituted primarily to equalize salary relationships between the 350-odd positions on Toledo's payroll and those in comparable industries or businesses, the Hibbs system—with the establishment of the $16.25 per point factor by mutual agreement of city employes and City Council—reduced salaries for 101 employes, but raised 2,138 others. Reductions were limited to $60 a year during the tenure of incumbent workers.

The Council, in adopting the system, also established a permanent Job Valuation Appeals Board comprising six employe and six management representatives, with a Civil Service examiner as chairman. At the end of summer, only seven appeals from point credits set by the survey had been considered. Five individual-position point increases were granted; two were denied.

Ronald T. Anderson, finance director of Toledo, explained that with basic agreement on the classification value of each city job, it was mathematically simple to adjust the budget annually with fluctuations in the cost of living. Traditionally, wage negotiations are conducted each year among employes, the city manager, and a special committee of the Council.

With the new system, Mr. Anderson pointed out, whatever cost-of-living agreement is reached among negotiators can be applied to the entire payroll by adding to, or subtracting from, the $16.25 factor.

Hibbs associates have established similar systems in a dozen industries, among them the Textileather Corporation, Toledo; the Pillsbury Mills, Inc., Minneapolis; the General Motors Acceptance Corporation, New York, and the Winton Lumber Co., Martell, Calif.

Build Good Will

By DE LYLE P. RUNGE
Director, Library Public Relations
City of Grand Rapids, Mich.

City Hall visitors see the display for the '47 open house.

MANY a city official and municipal department director has scratched his head over the vexing problem, "How can we get the public better to understand just what we are doing—how can we show them our problems and our accomplishments?"

Well, the city of Grand Rapids, Mich., has found one popular and workable solution to the problem of promoting good will between the citizens of the city and the city's various municipal departments and activities. Last year, Grand Rapids held its first Open House, or municipal fair. So successful was the venture that plans were immediately launched to hold a bigger and better Open House in 1947.

The idea behind the venture was aptly expressed in a statement released to the press, just before the first Open House last year, by City Manager Frank H. Goebel. "It will prove interesting and worthwhile, we are sure. The city belongs to the people, not to the city administration, and the more the citizens know what is going on in municipal affairs the easier it will be to make their wishes known and the better the relations between the public and the city's servants will be."

Plans for the activity, it should be pointed out, were not developed by Mayor George W. Welsh, City Manager Goebel, or the City Commission. Given the approval of these city fathers, the city department heads formed a committee to draw up the plans. Every employe was 100% behind the idea. "After all," each one thought, "here is a chance to show my neighbors and friends just what I do to earn my salary."

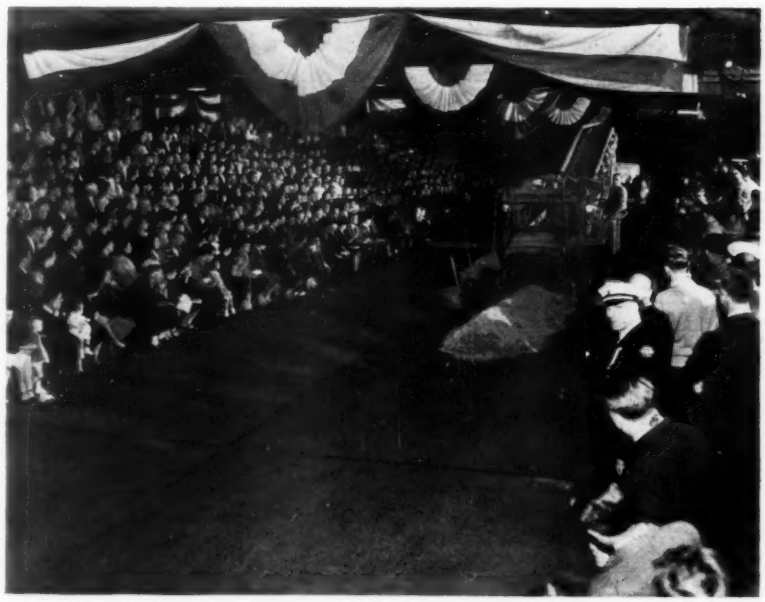
And how well did this first Open House go over? Let's take a look at a few figures. The dates set were October 21 and 22. All exhibits were open during both afternoon and evening periods on each day. Seventy-six booths were set up by various municipal divisions. These displays occupied one entire unit of the city highway building. Each evening featured a parade of city-owned mobile equipment, the vehicles passing in front of wooden bleachers erected so that all visitors could comfortably see the show. Following the parade a special spectacular demonstration was put on outside the exhibit building by the fire department. And how many people turned out for the show? Over 22,000.

To give you a better understanding of the type of exhibit displayed in these booths, here are some of the exhibits shown this year by a few of the many city departments and divisions:

Electrical Inspection Division: The right and wrong way to hook up electrical wires and appliances; the potential danger of inserting pennies in blown fuses.

Board of Education: A comparative display of two schoolrooms. One had grimy tan-colored walls and was lighted by old-fashioned drop-cord fixtures (a type of lighting still common to some Grand Rapids schools). The other was ideally illuminated with fluorescent lighting and had light diffusing pastel-tinted walls.

Public Library: Shadow boxes featuring enlarged color transparencies which vividly reproduce the modern color schemes achieved by the library in its recent redecoration of public reading rooms. Moving-film signs advertising various library services.



Some of the opening night crowds of the 1947 Grand Rapids Open House is shown above watching a snow elevator in operation during the parade of the city's mechanical equipment.

Filtration Plant: A miniature filtration plant in operation, demonstrating how and why chemicals are added to the water to assure its purity. Microscope set-ups showing polluted water and the organisms multiplying in it. Laboratory testing equipment, liquor stills, and a centrifuge.

Health Department: Nurses in uniform demonstrating the activities necessary to maintain and promote the city's health and welfare.

Division of Cemeteries: Proper burial methods. Modern lowering and maintenance equipment.

Wholesale and Retail Market Divisions: Colorful displays of locally grown farm and market produce.

Police Department: Various divisions showing specialized equipment and activities: sending out actual police radio broadcasts, fingerprinting, traffic and signal control equipment, guns, etc.

Plumbing Inspection: The disastrous effects of unsafe plumbing.

Milk, Meat, and Food Inspection Bureau: Microscopic and pictorial closeups of the Bureau's war against bacteria.

Water Department: A special water meter, with its internal structure visible, showing how it measures the flow of water through it. A model computation office featuring a mistake-proof billing machine to show citizens how their water bills are computed. Display of a machine that can tap an 8-inch hole in a big water main under 50 pounds of pressure and insert a valve without allowing any water to escape.

Fire Department: Outside demonstrations of life-saving equipment and a new 100-foot aerial ladder truck to supplement booth displays of fire-fighting equipment, life-saving equipment, and model signal and alarm equipment.

Street Lighting: A display of all the types of lighting equipment used by the city.

Hints for Other Cities

These necessarily brief and incomplete descriptions of some of the booths can only hint at the dramatic possibilities which make them so popular to Open House visitors. Any city, realizing the tremendous good-will built up by such a show, deciding to attempt something similar, may profit by the following working plans evolved by the Grand Rapids municipal employes' Open House Committee.

Publicity: Lew H. Boynton of the Grand Rapids water department, who handled the publicity arrangements for this year's Open House, stresses cooperative working with the local newspapers in planning advance publicity releases. Both local papers ran advance commendatory editorials on the show, one editorial captioned "The City on Display," the other, "Parading the City." The newspapers cooperated fully in publishing all material released about the event.

Starting nearly two months before the show, Mr. Boynton released, at intervals, stories about individual department plans for their booths. Each of these releases was in the form of a feature story. These stories alone have done much to inform the citizenry about the activities of their various city departments. He also has found direct mail helpful. This year, 5,000 multigraphed letters went out, individually slanted to one of the following five groups: clubs and organizations, individuals, teachers and pupils, pastors of all churches, and city employes.

Parking and Transportation: One reason for holding Open House in the municipal highway building was to afford a convenient place to park for visitors driving to the show. The adjacent wholesale market provides ample free parking facilities. The Grand Rapids Motor Coach Company provides free transfers to special Open House buses, which leave from the downtown area on a regular 15-minute schedule.

Mechanical Equipment Parade: One of the most popular features! Don't overlook its possibilities. Have the snowplows pick up shavings to simulate snow removal. Show progress by getting an early horse-drawn car to precede or follow a new motorbus. Include the library's bookmobile to show how a progressive institution can serve a growing community. Point out the need for new equipment by displaying antiquated mobile equipment still being used. Create civic pride in your municipality by displaying the newest equipment in use.

Display Plans: The importance of dramatic interesting displays which would demonstrate to each visitor some departmental activity was stressed by the planning committee. Don't kill interest by setting up dull, static exhibits. Have each booth attended by an official or employe of that department who can answer questions correctly.

Entertainment: This year a separate building wing, adjacent to the exhibit wing, housed the bleachers set up for the mobile parade. Entertainment was provided in this building by policemen's quartets, firemen's quartets, school choirs and bands.

Public Relations Opportunities: This year, each visitor to Open House received an attractive booklet about his city and his city government. The schools visited the exhibits; each class secured material from these visits to use for classroom exercises and write-ups in such subjects as English, history, science, and civics. The city clerk registered new voters in his booth, and the public library issued borrowers' cards to new patrons.

The public relations possibilities of an Open House of this type are unlimited. Why not try it in your city?

Above: The Department of Public Safety, Police Division, had several booths. Right: Some of the booths at the exhibit before the crowd arrived.

How to De-Soot an Asphalt Plant

Electric heaters replace steam and economically remove a source of smoke and soot

No smoke or soot mars the architectural beauty of this carefully planned New York City asphalt plant.

By E. H. RUSCH
Industrial Heating Specialist
General Electric Co., New York, N. Y.

IN VIEW of the attention focusing on road and street construction, and of the demand for a high-grade hot-mix sheet asphalt to be used in this program, it is fitting that engineers and public works officials examine the plants producing these mixes and study their improvements.

Much successful work has been done in the electrification of asphalt plants. No clearer example can be shown than the electrification that was designed and built into the plant owned and operated by the City of New York.

Sheet asphalt is really a mixture of asphaltum and the aggregate at a temperature of approximately 300° F, just prior to delivery. The asphaltum is delivered hot to the mixer and is combined with the aggregate which has previously been heated and dried. Asphaltum usually arrives at the plant in a liquid state, transported by steam-heated tankers or tank cars. One of the problems that confronts the sheet asphalt manufacturer is the maintenance of this asphaltum at temperatures needed to keep it in a liquid state until it is ready to be combined with the aggregate. This has, heretofore, required the installation and maintenance of a relatively large, usually dirty steam plant.

New York's Borough of Manhattan placed into service approximately two years ago a new plant for the manufacture of sheet asphalt. Use of electric heat in this plant has eliminated entirely the use of steam for heating the large holding and service tanks and pipe lines. The plant is located in the midst of a residential area, and what is ordinarily considered an objectionable operation has been made attractive.

The Role of Electric Heat

The engineers of the City of New York recognized early in their preliminary studies that the use of electricity for heat would eliminate one of the principal causes of dirt and soot, and thus help reduce the objectionable features of asphalt plant operation. However, there were some doubts concerning the required uniform heat distribution plus, of course, the question of operating costs.

Further study of operations indicated that electric heat could be used without cost penalty for the following reasons:

1. Since the asphaltum is delivered to storage tanks, the power required for the tanks would be small, provided sufficient care was taken to provide them with proper heat insulation.

2. The amount of heat required for the maze of pipe lines, surge tanks, and other appurtenances would be small since these too could be provided with heat insulation.

3. It appeared that the asphalt plant could be operated so that almost all the power required for heat would be used during the "off peak" period and, in any event, would be within the demand requirements established by the motor-driven mechanical equipment. The connected load of this plant covers 800 mechanical horsepower (590 kw) as against a total connected load of 610 kw for the electrical heating equipment.

A study covering operating costs, heat losses, and other essentials provided some interesting application data. The asphalt storage tanks were analyzed according to the table on the facing page.

Tanks 1-2-3 are for storage only.

However, the amount of power connected provides sufficient energy to bring them to the operating temperature in not over 240 hours in the event that the plant is shut down for an extended period of time. Tanks 4 and 5 are service tanks. The asphalt required for daily operation is pumped from any of the storage tanks into the service tanks where it is heated from 275° (storage temperature) F, to 325° F. The power connected in these service tanks provides heating of the tanks in not over 15 hours, done during the "off peak" period.

These tanks, both storage and service, are heated by G-E Calrod heaters which are inserted into the wrought-iron tubes, similar to boiler tubes.

Each tube contains a unit rated at 3.6 kw, 208 volts. The cap end of the unit provides a point of anchorage, maintaining the terminals in a fixed position, but allowing the unit to expand and contract during the heating cycles.

There are also two surge tanks which have a connected load of 8 kw and 5 kw respectively. They are heated in the same manner as the storage and service tanks.

Uniform Heat

The problem of providing uniformly controlled heat for the 4-inch pipe lines, valves, etc., was next considered. Based on the use of 1½ inch of sponge asbestos insulation, a connected load of 115 watts per lineal foot was selected.

The heaters were strapped to the pipe, and on the opposite side a spacer was installed, equivalent to the diameter of the heater. This assembly was then provided with a sheet metal covering which in turn was covered by the pipe insulation.

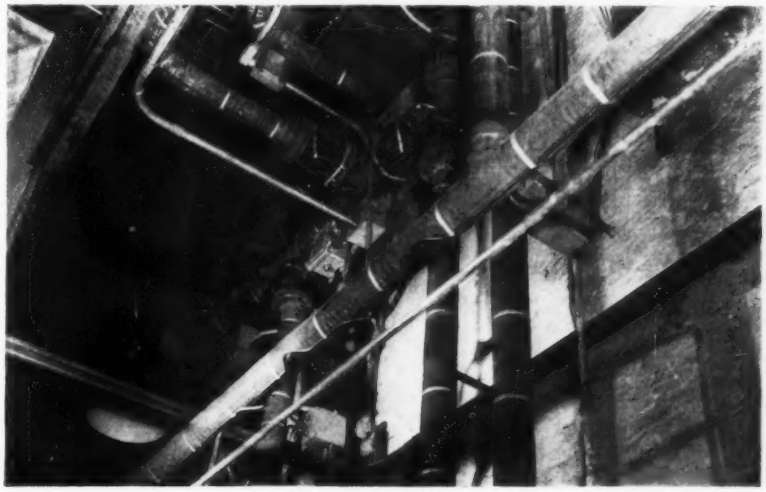
Manufacturing requirements definitely limit the length of the heating units. In the case of the pipe lines, it was decided to install the heaters in sections, but at the same time to take advantage of their flexibility. Thus, each heater was made longer than the section of piping it had to cover to take care of tolerance which must be allowed in erection of piping in the field.

The heaters were formed at right angles at the terminal ends in order to permit the terminals to project through the insulation. They were also equipped with a bushing and nut arrangement at the terminal end, which permitted the mounting of junction boxes. These were provided for connection between heaters and also as connections from the heaters to the power feed, all of which was arranged in conduit. All the heaters were wired to provide for a balanced electrical load of 208 volts, 3-phase for each section.

The flexibility of the heaters made it possible to provide for additional heat at all of the valves by simply forming the heater under the valve body so as to place more of the heater at that particular point. The temperature of the various pipe line sections is controlled thermostatically at 325° F.

Tank No.	*Capacity Gallon*	*Connected Load (KW)*	*Normal Operating Temp. Deg. F.*	*Service*
1	30,000	50	275	Storage
2	30,000	50	275	Storage
3	20,000	33	275	Storage
4	25,000	110	325	Service
5	25,000	110	325	Service

Above: Table of electric power needed to keep asphalt at the desired temperature for ready use. Below: The heaters are attached to the pipes and valves before being covered by insulation. Note extra lengths under the valves.



The asphaltum flow-meter pumps and weighing equipment, which are of special design for this service, were obtainable, equipped only with the usual surrounding jackets intended for steam heating. Electric heat was adapted to these by providing small circulating hot oil equipment thermostatically controlled by Calrod oil immersion heaters. A connected load of 3.6 kw at 208 volts was used for this.

To heat the mixers, in which a predetermined quantity of both asphaltum and hot aggregate is mixed to form the finished product, Calrod heaters are clamped to the sides of the walls and the bottom. The heaters in turn are covered with heat insulation. The connected load per mixer is 15 kw at 208 volts, 3-phase. The aggregate for the mix is heated by means of a direct oil fire in the rotating drum.

The use of electric heating in this plant has completely eliminated the necessity for a steam plant with attending maintenance and necessity for fuel storage. The plant has been in satisfactory operation for a period of two years, and although it is not operating at full capacity, the cost of the electric heat for the process is given at less than 20 cents per ton of asphalt paving mixture on the basis of 200-ton output daily, with the prediction that this cost could be reduced when the plant operates at full capacity of 800-ton output.

An "Alligator Operator"

HERE is a bit of sewer cleaning equipment that may or may not be popular with sewage works men generally. According to E. L. Filby of Black and Veatch, consulting engineers, Kansas City, Mo., at one time one Florida city cleaned its sewers by tying a rope and scoop around a stout young alligator and heading him into the sewer. Since he could not turn around and the scoop prevented him from backing out, he had to crawl down the pipe and pull the scoop after him.

Mr. Filby mentioned this during a discussion of sewage works equipment at the American Public Works Association's annual meeting in Jacksonville. He did not mention the civil service classification of the man who handled the alligator.

Artesian Water from the Back Yard

By FREDERICK OHRT
Manager and Chief Engineer
Honolulu Board of Water Supply

Honolulu's entire water supply originates only six miles from the city's pumping station

HONOLULU, a city of nearly 300,000 people, is located on an island that is about half the size of Rhode Island, or a little less than twice the area of New York City. The District of Honolulu, which includes the principal populated area as well as the entire watershed of the city, is limited to about 82 square miles. The water supply comes from rainfall on an area of approximately 25 square miles. The water enters the ground of the inland mountain area at elevations up to 3,150 feet, passes downward and outward to the so-called artesian basin under the business district of the city, and comes out in artesian flow at the city pumping stations, all within a total distance of 3 to 6 miles.

A Honolulu Artesian Well

This artesian system is so different from most of those known on the mainland that a few words of explanation seem desirable. According to the textbooks, an artesian well is one in which the water rises above the level of the water-bearing rock from which it comes. If the water rises above ground level and flows out on the ground, then the well is a flowing artesian well. That is what happens in many of the wells drilled in the coastal plain of the Honolulu and Pearl Harbor areas.

For water to be held under pressure, it must be confined. Usually artesian water is confined in a porous stratum between two impervious layers and flows from a distant area where the porous stratum outcrops at the surface. At Honolulu, the arrangement is a little different. The water-bearing rock is not a stratum, but consists of the whole pile of permeable lava flows that make up the volcanic range under and inland from Honolulu. There lava flows are broken by cooling cracks, clinker layers, lava tubes, and other openings and are capable of holding and transmitting large quantities of water. Around the southern margin of this range of lava flows is a wide fringe of coastal plain made up of gravel and silt washed out from the deeply dissected mountains, together with coral reef rock and late volcanic flows and volcanic ash from the more recent volcanic vents such as Diamond Head Crater and Punchbowl Crater. When recent volcanic formations are referred to, it is intended to mean something not over a quarter million years old; the main range, according to geologists, being probably two or three million years old.

Caprock Blanketing

The rocks that make up the coastal plain, from whatever source, are weathered mostly to a red-brown soil or gumbo which is impervious and tight to water. It is called a caprock and is the overlying tight rock which confines the artesian water in the porous lava rock. This caprock forms a blanket that is one or two miles wide and rises from sea level at the coast to an elevation of 50 or more feet at the inland edge. Here it wraps around the ends of the spurs of the range and extends as long tongues up the floors of the valleys. The caprock extending up the valleys tends to separate the water-bearing lava formation underlying Honolulu into five more or less independent artesian basins or areas. This factor is taken into account in the location of the various pumping stations.

The base of this caprock slopes seaward at several hundred feet to the mile so that at the coast, two or more miles from the margin of the range, the caprock is over 1,000 feet thick. We now have this picture: The fresh water is contained in the volcanic rock of the range, and along the coast it is confined underneath the blanketing caprock under sufficient pressure so that it will flow at the surface at points under the altitude of the artesian head.

The question might arise about what is under the artesian water or what holds it up. The answer is very different from what it would be in most of the well-known artesian areas of the world. At Honolulu there is no tight

Below: Central Honolulu and Harbor, from Punchbowl Crater. Right: A 42-inch supply line goes in to connect with the Halawa Underground Pumping Station. Note the rock excavation that is required.

Flow of fresh water into the tunnel at sea level during construction of Halawa Underground Pumping Station is typical of water infiltration into the lava rock.

Stream flows are always small when they flow over porous rock structure.

rock stratum under the water-bearing layer; so far as any borings have gone, the lava flows are porous down to more than 1,000 feet below sea level, and probably much more. The fresh water in this system is held up by salt water, in fact it floats on the salt water. Because the salt water is about 41/40 as heavy as the fresh water, the fresh water floats with about 1/40 of its volume above sea level. This follows the Ghyben-Herzberg principle which has been recognized on various coasts and some islands since about 1890 and holds along many miles of the Hawaiian coast where there is no caprock and where no artesian pressure is developed.

Where there is a caprock around the margin of the island which restrains the fresh water, it builds up a greater head above sea level. Since fresh water is 1/40 lighter than sea water, there must be 41 units of fresh water to balance 40 units of sea water. Thus, for every foot of fresh water above sea level, there will be 40 feet of fresh water below sea level down to its junction and point of balance with the sea water. This means that in the center part of Honolulu, where the static level of the artesian water is around 25 feet as at present, the fresh water extends about 1,000 feet below sea level and is tapped by wells down to 800 or 900 feet below sea level. A good fraction of the city water supply comes from 600 feet below sea level at the Beretania Pumping Station located in the center of the City of Honolulu.

It should be clearly understood that there are two conditions at Honolulu affecting the storage of ground water. One is the Ghyben-Herzberg condition: a large lens of ground water in the lava rocks, floating on the heavier sea water. The other is that the seaward part of the ground water is restrained underneath the coastal caprock, causing it to build up in head and to take on artesian pressure. Neither of these conditions is dependent on the other, and each can occur without the other. But, coming together as they do at Honolulu, they produce a remarkable mechanism of water production and storage.

No Rivers or Lakes

In Hawaii, there are no long rivers or large natural lakes which can serve as steady sources of water supply. In the sparsely settled parts of the island, people rely on catchment from rain on the roofs of their houses for family drinking water. Building of dams and use of surface reservoirs, except for relatively small ones, have not proved feasible in most areas because of the topography: steep slopes, narrowness of valleys, the torrential character of streams, and excessive losses by leakage into the porous rocks.

Under these conditions, the accumulation of fresh water in a great lens floating on salt water is of great practical importance. Further, the thickening of this lens through the retardation of the caprock in the Honolulu and Pearl Harbor areas, which has made it available from artesian wells, has been a factor of the utmost value in the municipal, industrial, and military development of these areas.

The behavior of the water supply contained in this great lens and its relation to rainfall fluctuations and increasing utilization constitute an extremely complex problem. On the one hand, the source of the ground water is in the mountainous area within easy view of many of the city's homes, and the artesian levels show a very prompt response to marked changes in rainfall, offering the constant hope that improved rainfall will alleviate the almost chronic condition of lowering artesian water levels. On the other hand, studies of water quantities and their relation to rainfall quantities lead to the realization that, owing to lowered heads through the past sixty years, the amount of water held in storage has been slowly reduced. Thus, a part of the water annually drawn is in reality not from contemporary rainfall but represents a draft on the capital storage that has been built up over many years in the rocks. We are thus forced to accept progressively lower estimates of the true safe yield of the intake area and to realize, at the same time, that our benefit from storage will diminish gradually.

Increased Salinity

The most insistent indication of diminishing storage is the increase in salinity in some of the deeper wells. In the Honolulu area the water does not run short, since the whole ocean could be drawn into our wells, but the depletion of fresh water can be indicated by an increasing fraction of salt water. This is caused by the shrinking of the fresh water lens in its subsea-level portion and the rise of the zone of transition, or fringe of salt water. This change first hits the wells that are nearer the coast and that are deeper because the caprock is thicker there. The change is progressive and seems now to be set in motion by the marked lowering of head of fresh water. Only a limited and temporary slowing of this process is achieved by increased rains or by decreased draft and a short seasonal rise

of the artesian head of the wells.

The city has been fortunate in that there has as yet been no appreciable change in the salt content of water drawn from the municipal wells but since there are other wells, only slightly deeper or farther seaward than those at each of the city pumping stations, we can only conclude that the day will come when our wells will also commence to show more salt.

Skimming Tunnels

Two courses of action are being taken. The first is that of constructing underground pumping stations which use skimming tunnels to draw water from the upper surface of the water table. These stations draw what is really the same water as that available from the artesian wells, but they take it from a point above sea level and hence escape the increasing salt content shown in water drawn from the deeper wells. Three such stations have been constructed. One of these is outside the artesian area of the city proper, though it is in the Pearl Harbor area where draft is also heavy. Three others remain to be built.

The process of building such skimming tunnel stations is already well under way on Oahu, and it is clear that for large-scale water development over many decades, such stations are more efficient and less destructive of the water supply than the artesian wells. The artesian wells played an important role in the development of the water supply of Honolulu, but such wells are now being sealed faster than new ones are being drilled and by the 100th year anniversary of the drilling of the first well, that is by 1979, it is believed there will be very few wells remaining in large-scale operation.

In addition to these new stations, every effort is being made to curtail unnecessary waste and also to increase the rainfall or surface water infiltration into the ground. Preliminary plans are under way for construction of several recharging stations by which water from several of the principal surface streams of the Honolulu watershed will be diverted into horizontal tunnels driven into the base of valley walls. These unnels will be driven into the lava flows which make up the water-bearing formation at elevations of several hundred feet above the main water table. Turbid water due to freshets in the mountains will be by-passed and the clearer water, with some settling, will be introduced into the tunnels to percolate downward through the rocks in the same manner as the natural infiltration. Eventually an average of about 8 to 10 million gallons daily can be added to the basal or main ground-water body, most of which will be recoverable at pumping stations serving the systems.

This amount will by no means solve our whole problem, but it represents one unit of the entire plan for conservation and efficient utilization of ground and surface waters. When all of the underground skimming-type stations are built, and draft from artesian wells stops, it will no longer be strictly correct to speak of Honolulu's artesian water supply; these stations will take the water before it passes under the caprock and hence before it has artesian pressure. In the existing pumping stations, the water rises to the pumps and the level of the connecting mains under its own artesian pressure. The pumps supply the mains and the interconnected reservoirs with water at the static head of 180 feet and 400 feet for use in the low-service zone (0 to 100 feet), and the high-service zone (100 to 300 feet). The reservoir capacity is only sufficient to carry daily peak loads and to aid in equalizing pressures.

In the three underground skimming-type stations the pumps are of the centrifugal type and operate with suction lifts up to about 15 feet at times of low ground-water levels. Pumps in each of the stations are set at a floor level just above contemporary or expected higher levels of ground water in rainy seasons.

There are three deep artesian well pumping stations located in the business areas of Honolulu, each furnishing both high- and low-service water. In addition, developed springs and high level tunnels in the mountains account for about two million gallons daily.

Michigan Regional Planning Commissions

THREE regional planning commissions designed to achieve mutual consideration and treatment of many problems of various local governmental units have been created as part of Michigan's state planning and development program.

While the problems vary somewhat in the areas covered by the new organizations, the reason for their creation is in each case the same: the legal inability of the existing municipal and county governments to carry out the necessary studies and activities essential to a joint approach to the common problems. The three commissions were created under Michigan's 1945 regional planning law by the Michigan Planning Commission. The agency was succeeded July 1 by a state Department of Economic Development which is expected to continue its predecessors' active encouragement of regional planning.

Saginaw Valley

Oldest, and geographically the largest, is the Saginaw Valley Regional Planning Commission, appointed in November 1946. It had its primary origin in the flood control and drainage problems that periodically arise when several fair-sized rivers spill melting snows and heavy rainfalls into a heavily populated basin which is all too small to carry the excessive amounts of water.

The Saginaw Valley commission is also empowered to assist local governing bodies with planning problems, develop recreational facilities, and to deal with various other matters which concern the 21 counties in the region. The organization has been operating with a full-time director and the necessary secretarial assistance for about six months. Chief activity of the commission to date has been an Army Engineers' hearing, attended by more than 500 persons, from which it hopes to obtain at least the beginning of a comprehensive flood-control plan.

Detroit Region

The Detroit Metropolitan Area Regional Planning Commission includes three counties and the many small and medium-size cities which surround the great automobile manufacturing center, as well as the metropolis itself. This commission will concern itself with almost all of the problems common to metropolitan areas. It is still in the organizational stage, having been created late in June. It is anticipated that this commission will also operate on a full-time basis with a paid staff.

Both the Saginaw Valley and Detroit Metropolitan commissions were assisted by funds allocated by the old State Planning Commission from Michigan's $5,000,000 public-improvement planning fund.

Copper Country

The Copper Country Regional Planning Commission, which was appointed in June, includes four counties in the copper mining region of the Northern Peninsula. It is expected to conduct extensive studies in area development and otherwise to seek solutions to the economic problems caused by the depletion of copper and timber reserves, which have been the basis of the economy of this largely two-industry area.

This commission has held two organizational meetings, but definite policy for full-time operation has not yet been evolved.

BEN CLARK
Department of Economic Development
Lansing, Mich.

Airport Snow Removal Principles

A compilation from a recent Civil Aeronautics Authority pamphlet on airport snow removal

Uncleared drifts such as are shown in this picture are a definite hazard.

CONFINING snow removal to paved portions of an airfield has proved unsatisfactory, particularly where snowfalls are heavy. The stock-piles of snow adjacent to the runway are detrimental to the airfield during the thawing season because water from the melting snow cannot drain properly.

Equipment can operate efficiently only if provisions are made for reconditioning during the operations and for storage and maintenance of such equipment to insure readiness for it when needed.

Snow removal should begin when snow has reached a depth of not over three inches and should, if possible, be pushed, hauled, or thrown to its final point of disposal.

When snow is light and dry, and cross-winds are unusually severe, procedures of routing of equipment are varied so that snow is moved with the wind, and the drifting is minimized by limiting the height of snow banks to windward. However, the operation of blade plows is not affected by adverse winds to the same degree as rotary equipment.

The method of compacting snow on an airfield may be adopted only in subarctic regions where the sub-freezing temperature is constant during the long winter season.

Use salts and salt-treated abrasives sparingly on airfield pavements, in places where turf may be damaged by the drainage of salt solutions, and on portland cement pavement to minimize scaling. Danger of scaling is slight on unscaled pavements over four years old, on those which have been sealed or surface treated, and on those constructed with air entraining agents.

Apply abrasives at the rate of ½ to 1½ pounds per square yard, giving first attention to intersections, turns, taxiways, aprons, and walks.

Use of Salt

To prevent sleet or wet snow from sticking to pavement and to soften or loosen ice, apply salts either in dry or brine form. Apply dry sodium or calcium chloride at a rate of 1/20 to ¼ pound per square yard, depending on the ice thickness and air temperature. Apply brine by dissolving 5 pounds of calcium chloride or 3 pouunds of sodium chloride to a gallon of water where ice thickness does not exceed ½ inch and temperature is not lower than 15° F. Apply at the rate of 1 to 3 gallons per 100 square yards, using a truck-mounted tank with a single feed line and a spray bar about 8 feet wide and 6 inches above the pavement.

Place more fences, usually about 75 to 100 feet to the windward of the area to be protected. Two or more parallel lines may be required in locations when winds are severe. Limit the height of fences to 10 feet. If conditions require additional protection, the height can be extended by building an addition on top of the accumulated drift.

Mark the end of the runway, after plowing is completed, by cinders or sand or any other dark-colored material so that the cleared area may be more readily visible from the air.

Broom the paved portion of the airfield clean after plowing to avoid possible icy conditions if unexpected day thrawings and night freezes occur.

Cover contact lights on runways with transparent hoods. These can be conical in shape, about 30 inches in diameter and about 24 inches high. The metal or wood frame is covered with cheesecloth.

In a single operation, the Sno-Go on the left, and the FWD truck equipped with snowplow attachment on the right, throw the snow far to the side of the runway being plowed and deposit it without the necessity of further handling.

Notes on Three International Congresses

By HERBERT EMMERICH
Director
Public Administration Clearing House
Chicago, Ill.

THE three congresses I attended this summer all pointed up the problems of overcrowding throughout the world. During the war, construction of new homes was not possible. All resources were directed to more vital military and civilian needs. In many European cities bombing and artillery fire have cleared the open areas needed for a program of rebuilding. European countries also have the legal authority to proceed with redevelopment but they lack the necessary materials and resources. The United States has the material resources needed for urban development but lacks effective legal authority in most states to clear and rebuild blighted areas. In the light of losses in manpower and the magnitude of material destruction, the Europeans are facing their problems of urban reconstruction more resolutely and courageously than are the Americans.

Reconstruction and Administration

Nearly 300 delegates from 21 countries attended the 7th International Congress of Local Authorities in Paris July 6 to 12. The problems of civic education, reconstruction and redevelopment, local autonomy, and of national municipal associations were all on the agenda. There was a round table on district or central urban heating. However, the plight of devastated towns and their reconstruction in France, Norway, Poland, Czechoslovakia, and England dominated the discussions. About twenty-five Americans attended, including four city officials (of whom three were mayors), delegates of associations represented on the American Committee for the International Union of Local Authorities (the American Municipal Association, the Civil Service Assembly, the United States Conference of Mayors, and Public Administration Clearing House), and, from the occupation headquarters in Germany, a group of American officials interested in municipal affairs.

The two other international congresses I attended were the Eighth International Management Congress at Stockholm, July 3 to 8, and the Seventh International Congress of Administrative Sciences, Berne, Switzerland, July 22 to 30. I also participated in the annual conference of the British Institute of Public Administration at Ashbridge, England, June 28 to 30. At all of these meetings there was tremendous interest in American developments and techniques; the delegates were especially eager to know what had been happening here since 1939.

More American Participation Needed

There is great need for Americans to participate in these international congresses and to support the organizations that sponsor them. It was unfortunate that the United States had no exhibit at the International Exhibition of Housing and Town Planning held in Paris in July.

I visited the center at Brussels and found that progress has been made in restoring it. Before the war this center was made up of the headquarters of the International Union of Local Authorities, the International Institute of Administrative Sciences, and the International Federation for Housing and Town Planning. The Federation is at present located temporarily in London.

The United Nations Economic and Social Council and UNESCO are taking an interest in the Brussels organizations. UNESCO turned over its meeting rooms to the International Union for its Congress this summer and has entered into a contract with the three Brussels organizations for a study of possibilities of international exchange of administrative personnel.

The Federation is organizing the 19th International Congress for Housing and Town Planning to be held in Zurich, Switzerland, from June 20 to June 26, 1948.

Billions Added to Assessment Rolls

MORE than $3 billion in property valuations have been added to assessment rolls in 49 major U. S. population centers this year as a result of new construction and increased real estate values.

The National Association of Assessing Officers, completing a survey of 49 assessment jurisdictions over 100,000 population, reports that Los Angeles county led the field with a 32.47% increase in assessed values during 1947.

Other high percentage increases reported by local assessors were Flint, Mich., 20.92%; Oklahoma county (Oklahoma City), 19.25%; Norfolk, Va., 16.22%; San Diego county, 15.12%; and Knoxville, Tenn., 14.81%.

Latest assessment figures in the 49 localities totalled $43.22 billion, compared to a previous total of $39.83 billion. The increases in 35 localities represent 1947 compared to 1946 assessments. In the remaining 14, 1946 assessments were compared to those of the previous year.

It is significant that every one of the 49 cities and counties surveyed reported some assessment increase, with an average rise for the group of 8.51%. The smallest percentage increase reported was in Reading, Pa., where the assessment total increased 0.20%.

Biggest dollarwise increase was New York City's $1.03 billion assessment rise—a 6.47% increase. New York's assessments now total more than $16.9 billion. Los Angeles scored a dollar assessment increase of $798 million. In Cuyahoga county (Cleveland, Ohio) $168 million was added to the assessment rolls.

New construction caused 100% of the assessment increase in seven jurisdictions—Denver, Elizabeth, N. J., Houston, Minneapolis, and the counties of Lucas (Toledo), Ohio; Mahoning (Youngstown), Ohio, and San Diego. The percentage assessment increase for these localities averaged 4.1%.

In Des Moines, Louisville, and Sacramento, increases in assessment totals were the result of new construction almost exclusively, though other minor factors entered in. In some cities, total valuations on assessment rolls were increased also by municipal annexation of outlying territory.

Generally increased property values caused the bulk of assessment increases in Buffalo, Flint, Syracuse, and Worcester, Mass. The Oklahoma county increase resulted from a re-assessment survey conducted during the past eighteen months.

Pipe Laying is More Than Digging a Trench

Discerning choice of pipe means successful construction

By ARTHUR L. SHAW
Partner, Metcalf and Eddy, Engineers
Boston, Mass.

THE art of selecting materials for any engineering project, including sewerage and drainage systems, is realizing the advantages of each material. Greatest economy results when each is used, within safe limits, so that its favorable elements are stressed.

In sewerage and drainage work, certain pipes have inherent advantageous characteristics. For example, in non-pressure installations vitrified clay pipe has known qualities. It is permanent; it is resistant to scour induced by high velocity and by flows carrying grit; it is resistant to the chemical action of products of sewage decomposition. It is also resistant to alkaline or acid ground water and to disintegration by chemicals and spent industrial wastes. It is adaptable to production in a variety of shapes. It has acceptable strength characteristics, and it is economical.

Just as all structural materials have advantageous qualities, they also have limited uses which should be respected in design and construction. Vitrified clay pipe for sewers has limiting strength and as a result, the particular strength classification should be selected to be consistent with external loading conditions. Such pipe, as do all other kinds of sewerage and drainage pipe, requires careful workmanship and inspection of laying and jointing operations. Sewer pipe is intended for gravity operation, not for operation at excessive internal pressure. Nor is it intended by its producers to be used without supplemental construction where foundations are not firm, or where excessive vibration or other external features are likely to displace the pipe after installation. These limitations relate to engineering design, inspection, and installation.

A large quantity of non-pressure pipe is used in public works construction where responsibility for success of the project is divided among three agencies: the engineer, the pipe producer, and the contractor. Each of these has his definite responsibilities. The producer carries the burden of furnishing honestly a product which complies fully with the accepted standards of the trade as developed by producers and users to meet the general requirements of all sewerage and drainage work. It is implied in any specification that pipe materials will have satisfactory permanence, have satisfactory hydraulic properties, and will meet a rather indefinable standard known as "good practice." The engineer carries the responsibility of selecting the proper materials, of the proper dimensions, to function so that the finished work will meet its purpose satisfactorily. The contractor, even though he is furnished with prefabricated materials and is expected to install them under specific directions of the engineer, carries the direct responsibility of using those materials and providing workmanship consistent with the intent of the specifications.

One of the principal lessons to be learned from past sewer construction is that completion of a satisfactory project involves much more than merely digging a trench and placing pipe in it. Sewer and drain construction calls for skilled practices based on experiences with previous work, on sound considered judgments, and on scientific investigations.

Left: Pipe can be laid without difficulty where the ground is firm and no foundation problems exist. Below left: If the subgrade support becomes a problem, it often pays to lay the line on a concrete base as shown. Below right: This type of ground condition requires care and attention to assure firm support.

Cumberland Sets Electric Plant Yardstick

Separation of generating plant from distribution system and requirement that the plant produce electricity at less than 1.6 cents per kilowatt insure good operation

IN CUMBERLAND, Wis., a community of 1,600, the municipal diesel electric plant operates on a unique basis.

The generating plant sells its output to the distribution system, its sole customer, in a formal separate transaction. The latter in turn retails the energy to the consumer.

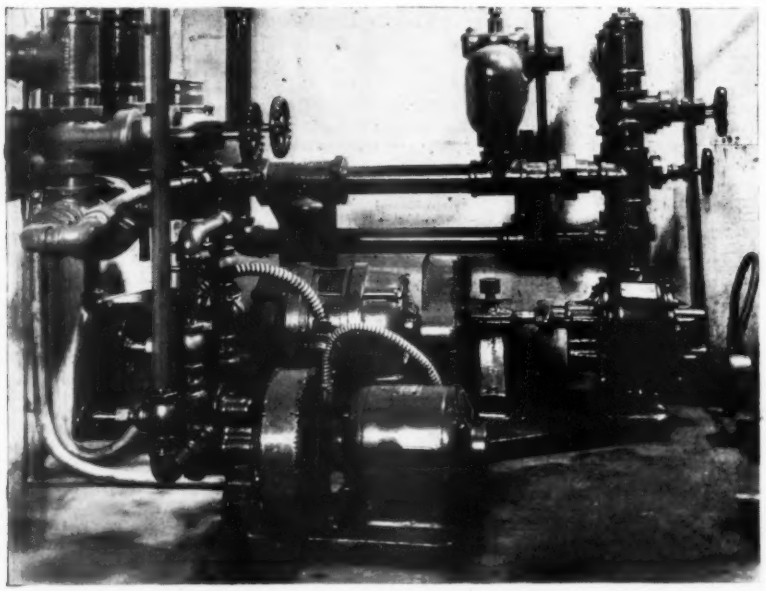
The advantage of this arrangement is that the power-conscious public knows constantly what its generating plant costs are running. The plant must produce electricity at a switchboard cost of less than 1.6 cents per kwh, a bid offered by an outside utility some years ago.

Charges

Last year, the generating plant, built around two 450 horsepower Buckeye engines and a 1,028 hp Fairbanks-Morse diesel, produced 2,408,339 kwh of energy and sold 2,309,247 to the distribution system. The average cost to produce was .978 cent a kwh. The distribution system paid 1.6 cents for every kwh delivered to it, a profit of .622 cent to generating. The distribution system received an average of 2.73 cents for every kwh it sold.

PRINCIPAL EQUIPMENT
Municipal Electric Plant
Cumberland, Wis.

Diesel engines: One, 1,028 hp., six-cylinder, 257 r.p.m., Model 33-E-16, Fairbanks, Morse & Co.; Two 450 hp, six-cylinder, 360 r.p.m., Model O, Buckeye Engine Co.
Alternators: One Fairbanks-Morse, 713 kw, with 20 kw belt-driven exciter; two Electric Machinery Mfg. Co., each 300 kw with 7½ kw belt-driven exciter.
Governors: Woodward Governor Co.
Switchboard: Eight panels including swinging bracket with General Electric instruments (Roller-Smith).
Water pumps: Two Fairbanks-Morse with F-M motors: Two Weinman.
Cooling equipment: One Diesel Service Co. forced-draft steel tower and one hot well for jacket water.
Silencers: Two Burgess, one Maxim, both for air-intake and exhaust.
Air filters: One American Air Filter Co., and two Burgess.
Air compressors: Two two-stage, one Westinghouse and one Curtiss; one by motor and one by interchangeable motor and gas-engine standby.
Fuel oil pumps: Two Roper.
Fuel oil filters: One Wm. H. Nugent Co. and two edge-type, make unknown.
Fuel oil meters: Two Buffalo.
Oil reclaimers: One Diesel Service Co. and one Honan-Crane.
Pyrometer: One Alnor.
Distribution transformers: Westinghouse and General Electric.
Distribution meters: General Electric.



Auxiliary pumping equipment plays an important part in smooth operation.

In the period of operation of the generating plant, beginning October 1939, its cost to produce each year has averaged less than one cent a kwh. Its sale price to distribution has been constant at 1.6 cents, while revenue to distribution has ranged by years, from a high of 2.96 cents to a low of 2.73.

The dual-plant system is an outgrowth of a legal difficulty arising when the community purchased power at wholesale rates from an outside utility. This resulted in establishing a kwh price of 1.6 cents to the distribution system as a constant. At the outset, the city signed a waiver to the Wisconsin State Power Commission to stick to that figure in return for getting a permit to proceed with the construction of a generating plant. The utility had been charging the city 1.45 cents a kwh, but asked 1.65 cents in its overture for renewal of contract. Cumberlandites advocating a generating plant had pledged to the community that such a plant would always operate at a profit. The plant is run as a separate entity to prove to all concerned that it is making a profit.

The plant, by careful operation, has made a commendable record of fuel economy. In 1940, it produced 11.18 kwh per gallon of fuel and in 1944 this had risen only to 11.70 kwh, mainly by favoring the use of the new larger engine.

Industries are the largest users of power in Cumberland, 669,667 kwh in 1945, on 28 meters. A vegetable canning factory used 312,300 kwh. Other major industries include a cheese factory, a factory making wooden window shades, a locker plant, a rutabaga wholesale warehouse where that vegetable is both washed and waxed for the retail trade.

Cumberland likes to tell the world about its rates to consumers. It is still using the schedules that had been in use by the distribution system before the generating plant appeared on the scene.

Net amount is due on the eighth of the month, gross by the twelfth. An average residential bill, 90 kwh, carries a charge of $3.40 net, $3.90 gross.

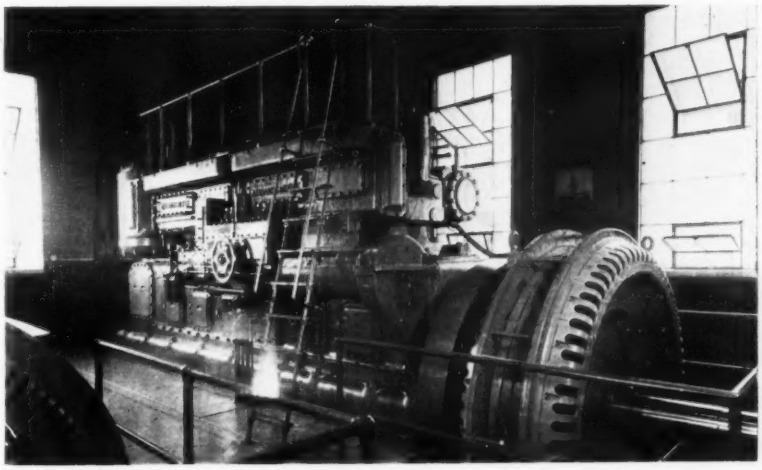
Growth of the plant, generating and distribution, in the six full years of

This municipal electric plant must be operated without noise or disturbance since it is in the center of town. The water pumping station is at the left. Below: This F-M diesel engine is a new addition to the generating equipment.

operation, is indicated in these figures for 1945 and 1940:

	1945	1940
Operating revenue	$58,872.88	$29,992.15
Operating expense	31,134.78	23,444.56
Net income to surplus account after deduction of depreciation taxes and interest on bonds	9,743.87	1,741.38

A commission of five members directs both generating and distribution plants, and the municipal water department as well, all forming the Cumberland Municipal Utility. John M. Nelson is president. His associates are J. F. Benjamin, W. G. Talbot, H. R. Hines, and H. S. Rose. Messrs. Nelson, Talbot, and Hines have been commissioners since the generating plant was installed. Clarence D. Maxey is superintendent.



How Much of What Residual in Your Water Supply?

A PROCEDURE that makes it possible to determine quantitatively the amount of free chlorine, chloramine, chlorine dioxide, and sodium chlorite in water containing a mixture of these constituents was described at the meeting of the Water, Sewage, and Sanitation Section of the American Chemical Society in New York recently. According to the authors, Dr. John F. Haller and S. S. Listek of The Mathieson Alkali Works, this analysis may be carried out within twenty minutes, and it offers valuable assistance in water treatment control.

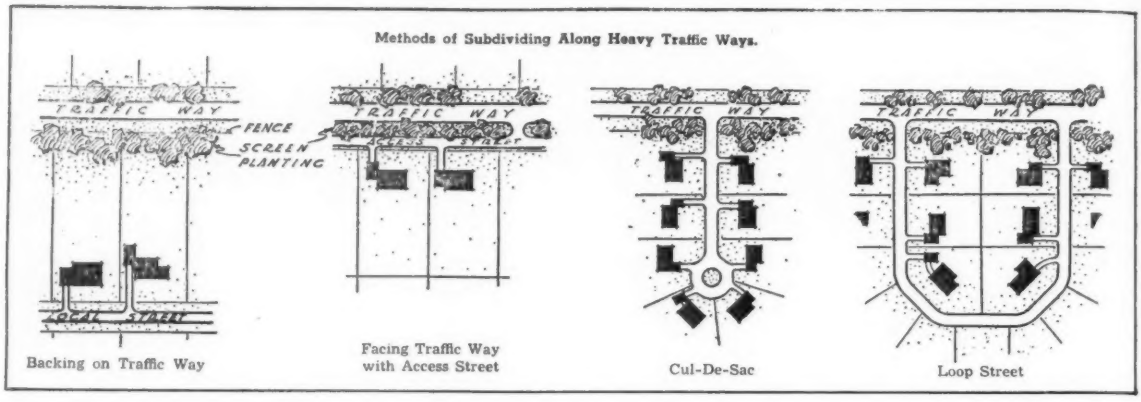
The distinction between chlorine and chloramine is important because of the lesser disinfecting power of the latter. Moreover, with increasing interest in the use of chlorine dioxide as a bactericide, a rapid and simple method for distinguishing between these various chlorine compounds in the water system takes on added importance.

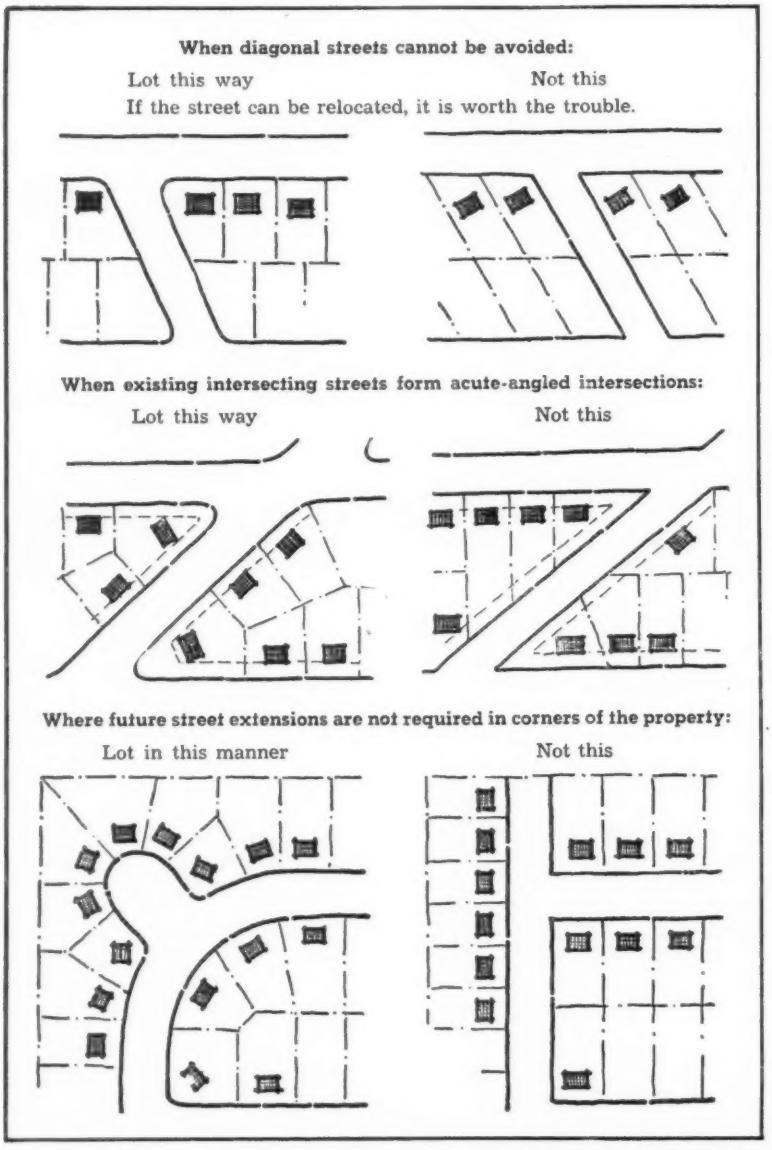
The analytical method consists of four amperometric titrations with sodium arsenite, from which the concentration of each compound may readily be derived. Free chlorine is determined by titration of a sample from which chlorine dioxide has been removed by hydrolysis at alkaline pH. A second titration, in the presence of the iodide, gives the combined concentration of chlorine and chloramine. A third titration, in neutral solution, gives the combined concentration of chlorine, chloramine, and one-fifth of the chlorine dioxide. After acid hydrolysis, a fourth titration in neutral solution gives the total oxidizing capacity, thus permitting the calculation of chlorine content.

Connecticut Refuse Costs

THE per capita cost per year for collection and disposal of garbage, rubbish, and ashes, according to Warren Scott, Sanitary Engineer, Connecticut Board of Health, varies from 83 cents to $3.95. These figures are exclusive of plant depreciation and amortization cost. The cost of collection and disposal of garbage alone runs from 63 cents to about $2.00 per capita per year.

Handbook for Community Building




When diagonal streets cannot be avoided:
Lot this way
Not this
If the street can be relocated, it is worth the trouble.
When existing intersecting streets form acute-angled intersections:
Lot this way
Not this
Where future street extensions are not required in corners of the property:
Lot in this manner
Not this

Reproductions of two illustrations from the *Community Builders' Handbook*.

A NEW publication packed full of practical ideas and recommendations for sound community development has been prepared by the Community Builders' Council of the Urban Land Institute. Entitled *The Community Builders' Handbook*,* it is based upon the experience of successful large-scale developers, and should, if its principles are followed, help to raise the standards for private residential planning and construction throughout the country.

Of particular interest to municipal officials are the following sections from the handbook's concluding statement:

The Council urges the greatest cooperation and consultation with the public officials and departments of local governments who represent the community. In turn it is urged that these officials and departments give serious attention to the multitude of problems which confront the community builder in his undertaking and with which obviously they cannot always be fully acquainted. . . .

American cities have been notorious for the vast losses which occur in large segments of our urban areas each decade through the building up and tearing down process. Sound community development, built in terms of generations instead of decades, will go far toward helping to remove this destructive process through providing better living environment for our citizens, preventing future slums, and maintaining the stable and reliable taxable values which are so necessary to the financial support of the governmental unit of which the community is a part.

The ultra-modernist and the seeker for radical, unorthodox or socialized departures in the field will not find

* *The Community Builders' Handbook*—Prepared by the Community Builders' Council of the Urban Land Institute. Seward H. Mott and Max S. Wehrly, editors. 1737 K. St., NW., Washington, D. C. Publication date, Nov. 1, 1947. 198 pp. Introductory offer, $10 per copy until Dec. 1. $12 per copy after Dec. 1.

them in the handbook, according to the foreword. However, the suggested practices and procedures and development-planning principles represent a long step forward over much current private subdivision work and residential building and should be helpful.

More than a third of the volume is devoted to a section on the planning and management of shopping centers—a unique and much-needed compilation of practical information and standards. Photographs of existing projects and suggested layouts for shopping centers of various sizes offer many ideas for those interested in shopping-center location and planning. Other valuable information is included on types of shops, average useable store dimensions, management policies, and consumer expenditures and their distribution.

First Principles for Rebuilding American Cities

By ARTHUR FITZGERALD

REBUILDING old American cities and guiding their new growth into efficient patterns will be the great American frontier in the years ahead. Progress, however, is being delayed in this complicated work largely because the people and the people's leaders have often failed to see clearly through the problem and to formulate a practical program of action.

Our cities are as good or bad as we allow them to be. They reflect our material or spiritual attitude, our selfishness or our generosity, our morality or our materialism, our vision or our blindness. They are also accurate measuring sticks of our social, political, and economic attainments and standards.

The rebuilding of our cities, where we work, play, raise our families, and pay our taxes, has not kept pace with the advance in other fields. Progress made in science and industry was made possible by the channeling of efforts into narrow fields under skilled direction aided by abundant private and public financing. The individual working alone has added much to these fields. However, the individual cannot rebuild cities alone, private philanthropy has not come adequately to the rescue, and only in recent months have states recognized that their cities are growing old and must be rebuilt with their aid.

Job Being "Muffed"

We are muffing this huge job because we have not grasped its significance and because the task seems so complicated and difficult. We are sure of our general objectives but, except in scattered instances, the techniques of putting good planning across and getting the job done to conform to our plans have not been learned. We are not using big business methods of selling the job. The automobile manufacturer spends millions of dollars on advertising until his product is known in every home; the "soap operas" sell millions of dollars worth of products to the housewife simply by explaining to her why the particular product is good and how it will help her. Those responsible for rebuilding our cities have not sold their product to us; they have not started to make the slightest impression on most of us. This is because public officials have failed to use a human approach—or have lacked the funds to make that approach really effective.

Overnight Change Impossible

The high cost of rebuilding our cities is a serious psychological hazard. The individual reacts to it by asking, "Will I gain in dollars and cents; will my property or my interests increase in value?" If he thinks the answer is "yes," he is for it; but if he believes the answer is "no" in his particular case, he is against it. This is a normal human reaction, but it is here and only here that the tide will be turned. While good city planning always produces higher over-all values, it must be conceded that in scattered situations the owner of a particular piece of property may be injuriously affected. Likewise, the financial cost to the community of slum elimination may exceed the financial benefits to the present generation. But the public obligation must be emphasized: the people must know the facts, they must understand the problem in terms of human suffering, degradation, crime, and under-privileged children who suffer innocently from living in such places.

We cannot expect to change our cities overnight any more than we can expect human nature to change overnight. More than one planning project has failed because of visionary dreams of a Utopia which neither the people nor their leaders could put into practical action. Replanning cannot start with a clean slate. We must start with what we have, and if what we have is not good, its elimination may have to come over the years.

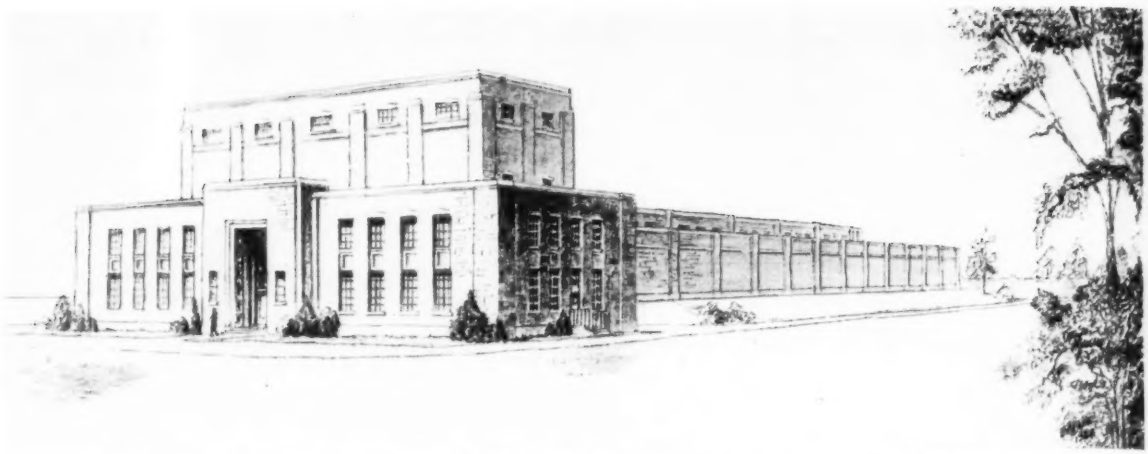
The greatest stumbling block in the way of good city planning today is the lack of money to get the facts down on paper and to pay for the services of competent assistance. Schools, roads, airports, and bridges may be financed by bond issues, and provision of money for their design is taken for granted. But too often the location of such projects in logical relation to other uses does not seem to matter.

To accomplish what we should in this generation will be possible only by almost superhuman endeavor in education and in selling a big job to adults. This method must not be postponed until the lifetime of the generation which follows us. Educators must examine textbooks and insist that, from the elementary grade to our universities, the men and women of tomorrow will be given the opportunity to gain an appreciation of the problems facing cities. They must see them as living organisms, forever changing, and always reflecting the emotions and the instincts of the people.

Today's Action Determines Future Framework

During the immediate years ahead, nearly fifteen million new homes will be built in this country. New business buildings, capital improvement programs, new industrial plants together will total billions of dollars. The framework of tomorrow's city is crystallizing today, the building program is getting under way, subdivisions are being designed, lots are being sold, highway alignments completed, industrial sites selected. An alarming amount of it falls far below known standards of good city planning and will be a monument to our stupidity for years to come.

This new frontier affords a challenge for a new kind of service. We shall either fall prey to world collectivism or emerge as world leaders setting the standard for a better world civilization. Our cities will be a measuring stick of how well we succeed.



When costs become more reasonable, Dayton, Ohio, intends to build this water softening plant.

Dayton Postpones Water Treatment Plans

Improvement project awaits price stabilization

By C. H. STEPHENS, *Superintendent*
Department of Water
Dayton, Ohio

CONSTRUCTION of a complete water treatment plant for the City of Dayton, Ohio, was scheduled to start during 1946. Careful studies about costs and availability of material and labor resulted in a decision to postpone submitting the project for bids.

The consulting engineers, Alvord, Burdick and Howson, Chicago, Ill., commissioned to design the treatment facilities, concurred in the decision. In their recommendations covering the subject, it was pointed out that construction costs had pyramided to such an extent that the original estimated cost of the project would be increased by 50 to 60 percent. Delivery of required equipment for installation in the plant had also slowed down so that the project, if started during 1946, would have suffered long delays, since most of this equipment must be incorporated at the time of construction. Both the City Manager and the Director of Water, after weighing the unstable present-day construction costs, were of the opinion that, in due time, prevailing conditions would right themselves and permit the construction of the plant at considerably less cost to the citizens.

Little Processing Needed

At the present time, Dayton is fortunate in having a copious supply of water, obtained and transmitted to the city and environs with a minimum of cost. No treatment has been necessary as far as purification is concerned, with the exception of adding chlorine to the water as a precautionary measure.

To the average citizen, the treatment of water merely means softening, which definitely is not the case. Treatment in complete form also includes the removal of certain elements and organisms from the water, aside from those which reduce the hardness of water. The benefits derived from complete treatment aid not only the homeowner, but industry as well. In the home we are concerned with a safe, certified water supply which will have a low hardness factor. At present it is necessary to use the standard water-softening devices which aid in reducing the hardness of the water. The manufacturer also is interested in this particular factor, but in addition, he is vitally interested in a water supply which has a minimum of organic impurities present. Although these impurities are not injurious to health, it is necessary to install expensive equipment to remove them before processing begins. In the brewing, distilling, sugar, starch, and other allied industries, organisms in the water must be removed or abnormal fermentation or reaction is apt to injure the product. The same is true in the paper, pulp, and dye industries, where water containing iron is detrimental to processing of materials.

But when facilities are constructed, in addition to complete purification, the homeowner will be supplied with water that will be at least two-thirds softer than the tap water as it exists today. The average hardness of the water in Dayton today is about 375 ppm. After treatment facilities are incorporated in the water system, we can expect a reduction to approximately 95 ppm. Water in this condition will eliminate the need for water-softening equipment in most instances. The conditioned water will suffice for all general uses at a considerable savings on a long-term basis.

It is not deemed practical at this time to list the estimated savings which should be realized on the reduced amounts of soap, powders, and softening agents, but one can readily realize that the savings will be substantial. Then, too, with a maintained soft-water factor, such as is proposed, corrosion in pipes, heaters, valves, boilers, and other plumbing fixtures will be arrested and generally eliminated, which in turn will effect savings in repair bills. Industry also will share by being supplied with a good quality soft water through the reduction and abolition of costly equipment, material, and repairs.

The Courage to Govern—

As a City Planner Sees It

By CHARLES B. BENNETT
Director of Planning
Los Angeles, Calif.
President, American Society of Planning Officials

SINCE the United States is fast becoming a nation of urbanized people, the city stands out as the keystone in the arch supporting the American way of life. Any disintegration which may take place in the political structure of America will find its beginning in cities. Therefore, those of us who serve in the local level of government face the responsibility of perfecting the management of public affairs to the highest degree possible, and in a manner consistent with the best principles of democracy. In doing our job, I think we need to guard against overcomplicating the mechanics of government. The more simple and streamlined we can keep procedures, the more efficient will be our management of public affairs....

Of course, in large metropolitan communities there is no such thing as getting by with a few laws on the books or a bare minimum of procedures, but because of the many complexities of large-scale operations every effort should be made to keep routine down to a minimum. I know one large city that uses a color system for official matters which come before the city council. Zoning ordinance amendments are on printed yellow forms; general resolutions on white forms; communications are attached to brown forms, and other ordinances are on blue forms. A system of this kind costs no more money, yet is very helpful to the clerks and others handling councilmanic matters.

The management of public affairs is far more important to society than is the management of private affairs. Salaries which cities have to offer competent help are notoriously low and, despite the general rise in wages, most cities are still lagging far behind the scale offered by private enterprise. We must remember that there is not enough security in a public job to enable us to secure the services of qualified personnel at salaries far below those offered by private industry. Here's one place where public leaders can show some courage. They should insist upon being able to bargain for the best technical help on the market side by side with private employers.

Elected officials are entitled to competent technical advice on all matters requiring it and upon which they have to make decisions. To expect them to get along without such advice is to condone acts of poor judgment on their part. Unfortunately, the attitude of the public in general is rather paradoxical. Too often they choose to believe that all public servants are incompetent, while at the same time resisting any adjustment in the tax income which will permit the city to engage the services of competent personnel.

To Say "No" Tactfully

Giving service to the public is a rather sensitive operation. There is nothing a citizen resents more than to have some clerk throw the book at him when he comes in for permission to do something which to him is obviously all right. He has little affection for legal technicalities. He feels that justice is far more important than any rule passed by the legislative body, and since our cities are run by and for the benefit of the people, we cannot be in too much disagreement with their desire for justice instead of legal gymnastics. I have no formula for a perfect routine except that employes on the public payroll should understand that they are working for the people—all of them—and have very little choice when it comes to what their attitude should be toward those who come to the city hall for service. Just because we have piled regulation upon regulation to the point where it now becomes necessary to say "no" 75% of the time, is no reason for adding insult to the injury which the citizen feels he has been subjected to by reason of the "no" answer. Department heads should be extremely careful in selecting staff members for public relations work and should insist upon all such employes being thoroughly familiar with the courtesies necessary if relations with the citizenry are to be amicable.

The road to good government is not an easy one, since its achievement depends entirely upon the ability and attitudes of those responsible for its functioning. In a democratic society such as ours, teamwork is the No. 1 essential in government. Managing the affairs of a city is not a one-man show. Responsibilities have to be divided up. The chief executive should be the captain of the team. The larger the community, the greater number needed on the team. Every attempt should also be made to bring civic leaders into the picture, not necessarily for the pupose of making those decisions which only the legislative body should make, but to be helpful when decisions have to be made affecting the present and future welfare of the community as a whole. Ours is not a government of Democrats or Republicans or any other political faction. It is a government of people by themselves. We should give them every opportunity to participate in the shaping of policies which affect their community living....

Beware of Your "Best Friends"

If I may take further advantage of my liberties as speaker, may I caution you councilmen and mayors against your best friends.... The safest course to pursue when one enters public life is to treat every citizen alike no matter who he is, with special favors to no one. If your friends don't like it, they are not worth knowing. It may cost you your political job, but it is much better to have served honestly and faithfully, observing all of the principles of fair play as intended by democracy, if for only a short time, rather than to attempt to perpetuate your political career through pettifoggery. Strangely enough, there is much less chance of the public official who follows a straight, down-the-middle policy of shortening his political career than there is for the official who tries to

With an enrollment of more than 1,500 delegates, the League of California Cities held a very successful three-day conference in San Franciso, September 22-24. A highlight of this annual convention was the talk by Charles B. Bennett, excerpts from which form the accompanying article.

Officers elected for the ensuing year were:

President, Mayor Edwin C. Carty, of Oxnard; Vice-president, Mayor Arch Davisson, of Colusa; Treasurer, Mayor Charles Pearson, of Anaheim; Executive Director, Richard Graves, of Berkeley.

Santa Claus his way into the hearts of the "right" people.

No Law Prohibits Good Manners

Another bad practice which should be eliminated is that of councilmen publicly criticizing members of boards and commissions for decisions made by them in reports submitted to the city council. For example, it is not only ill-mannered, but unsportsmanlike, for a councilman to put on a grandstand act at a public hearing by condemning the planning commission for the decision it has made in some matter. Planning commissions are purely advisory agencies and have the right to make such findings and recommendations as they deem advisable. The city council has the authority to disagree with the planning commission and should do so whenever it thinks the commission has erred in its findings. This can be done in a gentlemanly manner, since there is nothing in the state law or any city charter to my knowledge which forbids a councilman from being a gentleman. Ruth Hanna Simms, a great politician herself, once replied when asked what makes a good politician, "Good manners." To publicly criticize a body of citizens serving on a public commission, who give their time for nothing, is very discouraging and often one of the reasons why it is difficult to get citizens to serve on city commissions. Moreover, while the public castigation of the commission may delight a few citizens in the audience, massaging the public's ego in that manner builds up a disrespect for government, and this we cannot afford if our objective of proving to the world that democracy is the best form of government is to be realized. We must present a harmonious front to our constituency if we are to gain their respect and support. Working together, settling all differences around the conference table, being big enough not always to want our own way, being tolerant and modest and using common sense, are the qualifications needed by public officials if they would do a good job of serving the public. That kind of teamwork is the best guarantee I know of against totalitarianism. . . .

If I know the American public, there is little, if any, chance to win them over to a foreign ideology as long as they have an opportunity for employment and a chance to live decently. Only a complete breakdown in our economic system will endanger the way of life which we cherish so much. The extent to which we can prove to ourselves, as well as the world at large, that democracy, so far as governmental institutions are concerned, is the best form of government, is the degree to which we public officials can make a contribution to world peace.

To do this we must address ourselves first to the job of running our cities with the courage always to do that which we think is best for all of the people whom we serve, even though there may be those who take violent issue with us. . . . I mention this matter because I think all of us from now until sometime in the future are going to have to face organized attacks on many of the laws we have placed on the books to protect the future welfare of our communities. I have particular reference to building code and zoning regulations.

When the Profit Dollar Wears a Halo

In the building development field the profit dollar is again wearing a halo. Many of those who are endeavoring to capitalize on the tremendous market need for housing appears to care little, if any, about the future welfare of the community. Profits and planning have met at the crossroads and planning is expected to give way. The extent to which we weaken and relax those rules which are important and necessary in order to protect and conserve the community welfare should be most carefully considered. There are those who would abolish all rules and regulations, having just come out of a war period when almost everything was under control. Just how far we go in capitulating to their raucous demands will depend upon how strong or weak we are.

It has been said, and it will continue to be said, that housing for veterans and others cannot be produced unless builders are permitted almost free rein to do as they choose so far as building code and zoning regulations are concerned. Only one who was born in a fog will believe this, but it is surprising how many people must have been born during foul weather. Unquestionably, some relaxations may be advisable because of the acuteness of the situation, but to relax our requirements to the extent which will permit the building of slums in our cities is going a bit too far, in my opinion, and we must hold the line against that kind of attack.

Building officials and planners, as well as members of the legislative body, should agree on those standards which are necessary to protect the best interests of the people they represent. They should know fully what these standards are and be prepared to defend them. . . .

In my opinion, and also that of enlightened public administrators, there is no such thing as having good government without good planning. When I say good planning, I am not talking about pretty pictures or models of grandiose projects conceived on the city-beautiful idea. I am talking about the tool of common sense and reason—the careful thinking necessary before intelligent action is possible. No one would think of building a house without a set of blue prints, nor would one think about taking a lengthy voyage without charting a course after careful consideration. If we are to know where we are going, how we get there, and what we do in the interval to achieve our destination, then we must have the kind of blueprint and set of specifications which come out of the planning process. Why any intelligent legislator should fear planning is beyond my understanding. Certainly there can be no harm in a bit of down-to-earth research and crystal gazing. If planning is the prerogative only of visionaries, then so was the automobile, the telephone, the radio, and the airplane, not to mention the atom bomb.

One of the healthiest things we do so far as the welfare of our constituents is concerned is to take a peek at tomorrow in order to be prepared for things to come. No city can grow in a sane and orderly manner unless it has a set of specifications to guide and protect such growth. A great deal of money is spent on public projects, much more than is generally realized. How this money is spent is extremely important. If public facilities are constructed willy-nilly and not in conformance with a carefully thought out, preconceived plan, much waste will result. The purpose of planning is to chart a course and to prepare the necessary maps and specifications to guide the community on its trip into the future. Without such guidance, confusion and disorder results.

We must have good zoning and building laws, subdivision control, and blueprints showing where the main traffic arteries are to be as well as all governmental facilities such as schools, parks, playgrounds, libraries, and other public buildings. . . .

Enlisting Citizen Cooperation

The establishment of a planning commission is one means of bringing about citizen participation in the solving of some of the difficulties of city management. I believe that citizens as well as public officials should do a little sweating over the problems which are constantly being thrown into the laps of the city fathers. But wherever a planning commission is established, the mayor and city council should be generous enough to see that the citizens who serve on it have the necessary tools to work with. I mean by that, funds sufficient to hire someone to do the technical spade work. You would not expect a laborer to dig a six-foot trench with a teaspoon, and yet I know many planning commissions expected

to carry out the responsibilities imposed by the state planning act, which are highly technical in character, without any budget allocation permitting the employment of a technician. This does not make sense and is certainly very poor public administration. . . .

Since I am handing out advice freely, may I venture to say that I think it is harmful to the best interests of local government for elected officials and administrative department heads as well, not to be able to get away occasionally and attend state and national meetings on problems in their particular field. Sitting too close to the local cracker barrel is bound to develop into a complex of provincialism in the best of public officials. It would be good for their souls, as well as their ego, to go to a national conference occasionally and find out that there are smarter officials in their field doing a much better job elsewhere. I cannot urge too strongly that the city purse strings be loosened sufficiently to permit such pilgrimages.

Excerpts from a paper presented at the annual convention of the California League of Cities, San Francisco, September 22, 1947.

Law Officers Adopt Important Resolutions

AT THE concluding session of its annual convention, held in Los Angeles September 29-Oct 1, 1947, the National Institute of Municipal Law Officers adopted a series of resolutions on subjects of great importance to cities, large and small. In brief, the Institute resolved:

1. Opposition to the passage of any amendment to the present federal law which will require cities to secure the approval of their governor or aeronautic commission before applying for federal airport aid.

2. Opposition to discrepancies between the representation in legislative bodies from cities and towns as compared with representation from rural areas, resulting in discrimination in representation and legislation, detrimental to the best interests of citizens of municipal areas.

3. Advocacy of legislation by Congress to offset the Supreme Court decision in the case of *United States* v. *State of California* which held that the rights of the Federal Government to the land underlying the three-mile ocean belt are paramount to those of the State of California.

4. Opposition to H.R. 2972 and 2973 proposing amendments to the Federal Power Act.

5. Opposition to H.R. 4051 and S. 734, which would "weaken and impair the jurisdiction of the Federal Power Commission over natural gas pipeline companies, and cause substantial increases in the prices to be paid for natural gas by the ultimate consumers thereof."

6. Continued support of the Taft-Ellender-Wagner public housing bill as "vitally needed to provide the impetus to the solution of the widespread housing problem."

7. Advocacy of an appropriate study by Congress of the effect of federal land holdings on the tax revenues of cities and enactment of "such legislation as may be necessary to rectify this inequitable situation."

8. Amendment of Public Law No. 132 to the end that the machinery and equipment of the RFC may be subjected to local taxation when and as permitted by appropriate state law.

9. Enactment of legislation by Congress for the purpose of aiding our cities in the construction, reconstruction, and rehabilitation of adequate sewage disposal facilities.

10. That whenever the United States or any of its agencies acquire land as a site for manufacturing or commercial purposes, such land and any buildings, structures, or fixtures attached to and forming a part of such land shall be subject to taxation by the states and their subdivisions as though possessed, or leased, by private enterprise.

NACOS Elects New Officers and Directors

HITTING an all-time "high" in both membership numbers and attendance, the 33rd Annual Conference of the National Association of Commercial Organization Secretaries, held October 12 to 15, at Colorado Springs, rounded out a very full program by electing as its new president Lloyd E. Foster, executive vice-president, Birmingham, (Ala.), Chamber of Commerce. The retiring president was Paul W. Williams, Dayton, Ohio.

W. N. Blanton, executive director, Houston Chamber of Commerce, was chosen as vice-president; and William H. Book, executive vice-president, Indianapolis Chamber of Commerce, became secretary-treasurer. Miss Betty Glenn was continued in office as executive secretary of the national organization. Four vacancies on the board of directors were filled by the election of J. Malcolm Bridges, managing director, Richmond (Va.) Chamber of Commerce, and Howard N. Yates, host secretary at Colorado Springs. Re-elected to fill the remaining vacancies were Archie J. Baley, general manager, Lincoln (Neb.) Chamber of Commerce, and Harry J. Krusz, general manager, Winston-Salem (N. C.) Chamber of Commerce. Other members of the board are: H. L. Buck, Billings, Mont.; D. W. Campbell, Long Beach, Calif.; Jeffrey J. Hammel, Bristol, Conn.; E. S. Holliday, Galveston, Texas; Alfred McVay, Walla Walla, Wash.; Clifford Penland, Memphis, Tenn.; and Walter G. Roehl, Wausau, Wis.

Mr. Foster had served in the outgoing board as chairman for the Conference program, an office which now devolves on Mr. Blanton. It is customary to reward such service by election to the presidency, although exceptions to this rule have occurred in the past.

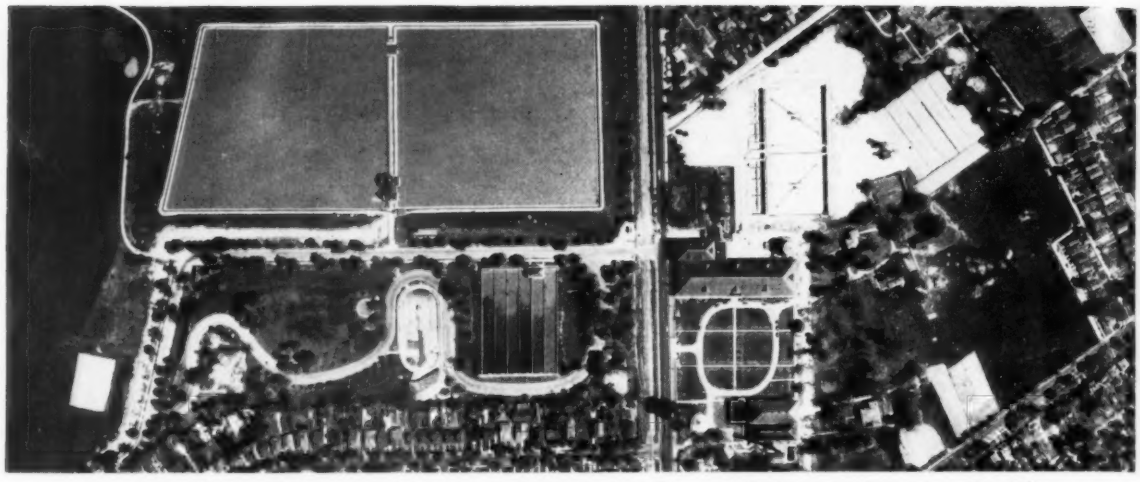
Convention Highlights

Attendance at the Conference reached a total of 605, and membership in NACOS climbed to 1,788 during the past year. A crowded program claimed the attention of those present throughout the Conference period. High spots were talks delivered by Prof. Robert Smith, SMU, Dallas, Texas; Dr. Kenneth McFarland, superintendent of schools, Topeka, Kans.; and Harvey Stowers, assistant to the president, Aircraft Industries of America, Inc., Los Angeles.

A feature of the program was a series of "Workshop Sessions" in which representatives of cities in various population brackets found subjects of special interest presented by outstanding figures among NACOS membership.

In keeping with past practice, there was a presentation of certificates of membership in the "NACOS Twenty-Five Year Club" to those members who had attained that length of service in the organization. Included with those so honored were Harvey J. Campbell, Detroit, Mich., Ben B. Lawshe, United States Chamber of Commerce, Washington, D. C., and John P. Mack, vice-president, American City Bureau, Chicago.

Consideration of various invitations for next year's Conference resulted in the choice of Philadelphia as the location for the annual meeting in October 1948.



A view of the Louisville plant as it appears from the air. The new clarifiers are located at the right.

Louisville's Softening Program

The latest step in this city's treatment of the water drawn from one of America's most polluted rivers

IF, when Louisville, Ky., completes its sewage treatment plant, it were to provide a thorough treatment, possibly with an intermittent sand filter for final polish, and then return this treated sewage directly to the water works, the people of Louisville would look with apprehension on the procedure. But probably such treatment would produce a raw water that actually is superior to the present supply from the highly polluted Ohio River that is at present available to Manager B. E. Payne, for not only does he have to contend with strong and troublesome pollution, with difficult taste and odor problems, but until recently he was forced to deliver a water with an annoyingly wide range of hardness.

The fact that the municipally owned Louisville Water Company has been able to produce a water that meets the standards of public health requirements is a tribute to the staff's operating skill. The fact that the management made plans to go further and furnish a water of consistent hardness, low enough to make it favorable both to industry and domestic users, is a tribute to its consideration of the customers' desire for a water of general usefulness rather than one that is only bacteriologically "pure."

Pollution a Major Problem

The Louisville battle with Ohio River pollution is well known and historically important in the water works field. In 1897, the internationally known sanitary engineer, George W. Fuller, conducted his significant experiments on Ohio River water that resulted in the construction in 1909 of a pioneering rapid sand filter plant. Louisville has used this method ever since and has constantly enlarged and revised this basically well-designed treatment plant. The original plant was built around a 12-mg coagulation basin. The year 1914 saw the filter capacity boosted to 36 mgd; 1927 witnessed the rearrangement of the coagulation basins to boost capacity by 48 mgd divided among eight filter units, each of 6 mgd capacity—the largest in service at that time. They were followed in 1930 by the construction of six more of the same capacity and later by flocculators in the old coagulation basins to improve mixing facilities. At present the plant has a total filter capacity of 120 mgd and a raw-water reservoir of 100 mg.

Before looking at the water softening facilities, it would first be important to know why water softening was necessary. Hardness of the raw water fluctuates with the season, becoming low in the early spring and summer months and gradually rising during the low-water periods of November and December. During the period between 1938 and 1944, the total hardness varied between a low of 56 ppm and a high of 187 ppm. The temporary and permanent hardness also were unusually variable. One extreme showed the water having a temporary hardness of 43 ppm and a permanent hardness of 13 ppm. Another showed a temporary hardness of 35 ppm and a permanent hardness of 120 ppm, reversing the previous trend.

Obviously it is easy to see that fluctuations like this were not only bad for industrial water users but also were annoying to the Louisville housewife.

To correct this, Louisville called on the assistance of Alvord, Burdick and Howson, Chicago consultants, and embarked on an improvement program that was carried on during 1945 and 1946. The improvement consisted primarily of mixing and clarifying basins designed to operate in series with the old coagulating basins. The raw water still is treated with alum, mixed by its flocculators, and settled for a short period in the old coagulation basins. After this point the coagulated water receives a treatment of lime and soda ash and sometimes of alum applied in the tunnel as it passes the chemical building. A Simplex orifice meter measures the flow through the tunnel; Chapman valves and sluice gates and an R. & S. Products Corporation float-controlled 48" butterfly valve provide the control.

Following rapid mix is a 20-minute reaction period in Dorr flocculators whose capacities are based on a rated capacity of 80 mgd. This is followed by clarification at the same rate, in Dorr clarifiers 200 feet square providing

three hours of detention. The clarified water then proceeds to the filters before being delivered to the distribution system. During periods when the softening facilities are not required, the new clarifiers are operated in series with the six old settling tanks without the softening chemicals.

Equipment

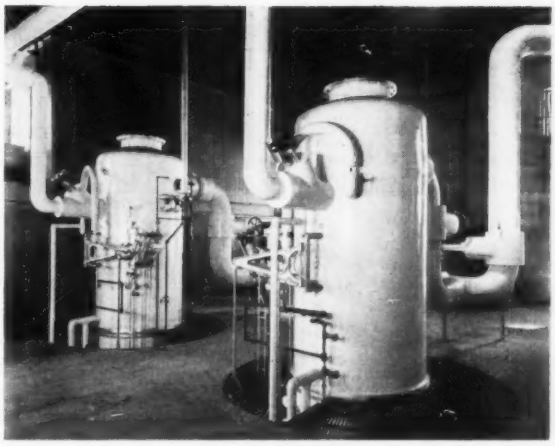
The plant has 14 Omega dry chemical feeders that provide duplicate chemical feed in all cases. The machines are served by 10-foot-diameter overhead storage tanks having capacities varying from 40 to 75 tons. It also provides reserve storage for lime and soda ash. The reserve is 75 tons in the case of lime or 140 tons for soda ash.

A Dracco Corp. pneumatic conveyor delivers the chemicals to the storage tank. All chemicals except ammonium sulphate and activated carbon are received at the plant by railroad car. Both of these are received by truck and placed in the chemical building by elevator. The plant at present is having difficulty obtaining a supply of lime and soda ash to keep the softening work operating at an optimum manner; however, during a normal year it expects to receive and use 120 tons of alum, 50 tons of ammonium sulphate, 2,900 tons of lime, and 1,200 tons of soda ash.

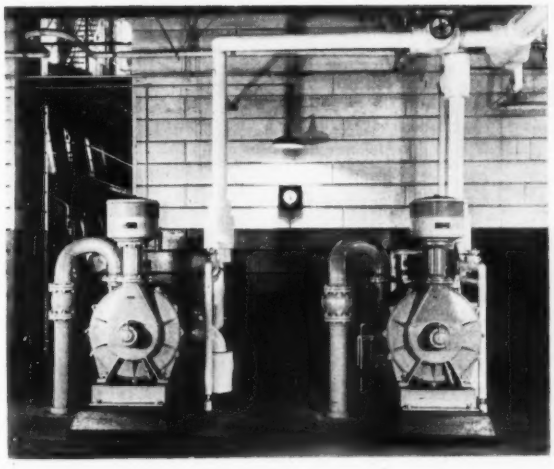
The ammonium sulphate is supplied after filtration to provide a chloramine residual and thus make sterilization effective at the extreme ends of the distribution system.

To overcome differences in raw-water temperature, the plant heats the water that is used to put the soda ash into solution and to slake the lime drawing on heat from the boilers in the steam pumping station. A meter and thermostatic controls keep the combined water at a fixed temperature and thereby are able to provide uniform conditions for the feed. The raw water varies from 35° to 85° F throughout the year.

To correct excess alkalinity, the plant makes the usual application of carbon dioxide. However, it generates the gas under sufficient pressure so that it can be applied under water without the use of carbon dioxide compressors.



View of the top of the two carbon dioxide generators that apply the gas under pressure to the recarbonation chamber.

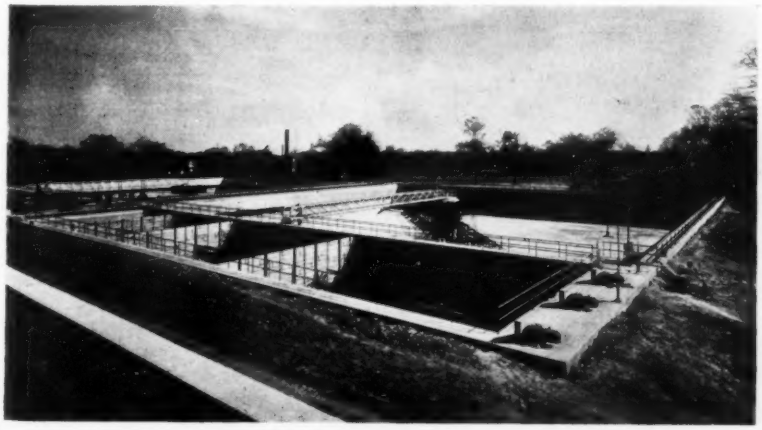


The compressors supply air to the CO_2 generators.

The generators consist of oil-burning duplicate vertical units, each able to produce 15,000 pounds of carbon dioxide per day. The carbon dioxide gas is delivered to the water by an underwater pipe in the recarbonation chamber.

Consequently, Louisville today can take the questionable Ohio River water, pry out the heavy load of mud and pollution, equalize the variable characteristics of hardness, and bring it to a range between 50 and 80 ppm. Thus they are able to give the people a water that not only is bacteriologically pure but is reliably consistent in hardness.

The Louisville Water Company has been municipally owned since 1906. It is managed by a five-man board headed by Henry M. Gerber, president. Mayor E. L. Taylor is an ex-officio member; B. E. Payne is chief engineer and superintendent. The recent improvements were designed and their construction supervised by Alvord, Burdick and Howson, consulting engineers, Chicago, Ill.



A close-up of Dorreo flocculators—clarifiers at the Louisville plant.

Is Garbage Reduction Feasible?

Indianapolis, Ind., reclaims grease, tankage, and feed while disposing of the city's garbage in a manner that insures high sanitation standards

By W. H. FRAZIER
Superintendent of Garbage and Sewage Disposal
Indianapolis, Ind.

IS THE practice of garbage reduction one that will pay dividends?

This is a fair question and one that the Sanitary District of Indianapolis has been facing for two decades. Some light on the answer lies in the cost and revenue statement for 1946:

Total sales	$186,832.00
Operating cost including labor, power materials, and maintenance, but not depreciation	144,252.00
Net to the Sanitary District	42,580.00

These figures were based on OPA controlled prices for the first ten months of the year of 7 cents per pound for grease, $20 per ton for feed, and $6.25 per ton for fertilizer. With OPA controls removed, grease price rose to 13 cents for the last two months of the year. This year's prices for grease have been at 17 cents during the first quarter, 20 cents for the second quarter and 8⅝ cents for the third.

These prices have resulted in an income during the first seven months in 1947 of slightly more than the total for 1946. Totals for 1947 probably will be close to $300,000, with operating cost at about $175,000. Since garbage receipts are below those of 1946, the difference in income is solely a matter of price.

With inflationary prices unbalancing the picture, the main question is resolved into the degree of price drop which can be absorbed before the plant becomes a liability.

This, too, is a highly involved situation. In 1946 Indianapolis contributed slightly over 26,000 tons of garbage to the reduction plant, which is well below the 30,000 normally expected. Part of this is due to the shortage of foods and more careful preparation of them, but still more is caused by the scarcity of stock feeds, which results in private haulers' operating in the alleys to pick up feed for their animals. A more normal supply and demand would mean that the plant would get more raw materials, which would increase the volume produced with very little increase in operating cost. With this prospect, a substantial price drop would be necessary before an unfavorable cost balance would result.

Incineration costs, on the other hand, would be from $1.25 to $2.00 per ton for this city; thus the reduction plant could operate at a loss of $35,000 to $60,000 and still put the Sanitary District in a more favorable position.

Whether present prices will drop to OPA levels or not is something that manufacturers themselves cannot say. However, the grease market is a notorious "wildcat," and comparisons with normal years are indeed difficult; but it is estimated that grease would have to drop to 5 cents per pound or below to bring revenue down to the operating cost level. Improved processing is likely to make this picture still more favorable.

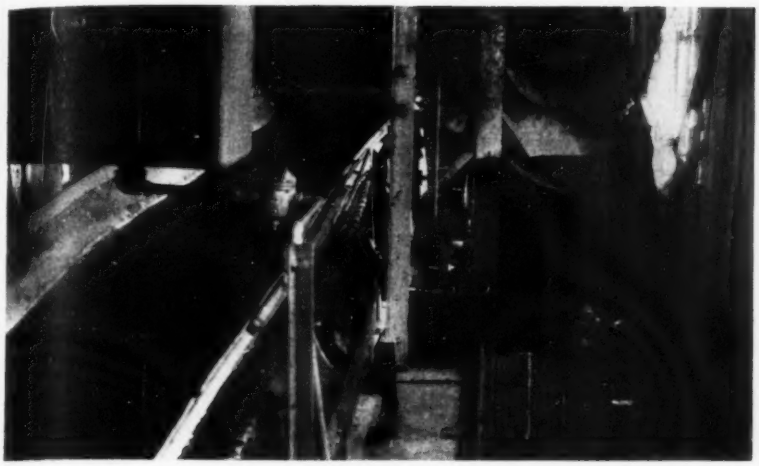
Importance of Cheap Power

Are there any special considerations affecting garbage reduction in a city's operating schedule? Yes. The principal factor is a source of cheap steam power. Indianapolis operates both sewage and garbage reduction from the same power plant, a practice which results in much lower costs than if separate installations were needed. Most larger cities have possibilities for similar cooperative efforts either with sewage plants, water works, or municipal electric plants, providing they accomplish the necessary coordination. The size of the city, hauling distance, the type of collection to which the city is accustomed, the labor supply, and many other factors also affect the situation.

What constitutes the greatest difficulty in plant operation? Extraneous materials in the garbage received. Glass is the greatest problem; metal, rags, and paper are a close second. If these materials were not placed in garbage cans, 95% of the extracted tankage could be sold as feed at a price three times that for the fertilizer. These extraneous materials also increase abrasion and result in more frequent breakdowns of mechanical equipment. This factor, combined with the corrosive nature of garbage, makes the mainteance of equipment a major problem.

Plant operation evolves around a cooking and drying process that results in disintegration as well as sterilization of garbage solids. Following this, the tankage is extracted to recover the grease, with the extraction tankage being separated into feed and fertilizer base. The extracted tankage is a dry, inert, and inoffensive product which eliminates sanitary problems in hand-

The plant receives the garbage in a pit similar to that used in modern incinerators and transfers it to a conveyor belt by means of a travelling scraper.



As the belt takes the garbage to the cookers, pickers remove foreign material.

ling. About 75% of total revenue from the sale of by-products comes from grease recovery.

The plant receives the garbage in a pit similar to those operated for incinerators. The garbage is removed from the pit by a traveling boom conveyor which rakes the garbage into a longitudinal flight conveyor along one side. From the flight conveyor the garbage is dumped onto an inclined rubber belt, where a man rakes the material to expose large pieces of extraneous materials such as glass, metal, rocks, or other scrap. These pieces are picked off the belt by two men stationed beyond the rake operator. A magnetic pulley takes out any iron which slips by the pickers. From here the garbage is moved to the top of the cookers by belt conveyor.

Grease Extraction

There are 32 cookers operating on a batch process, with each cooker producing about a ton of dried tankage per cycle. Since garbage as received is 70% to 80% moisture, each cooker has to be loaded with five or six tons of raw garbage. The garbage is first cooked with direct steam at 90 psi for two hours. After that the pressure is dropped, the tanks unheaded, and the garbage allowed to settle for 30 to 45 minutes, while free grease rises to the top and is skimmed off. After skimming, the tanks are headed up again and steam is turned into the tops to "press" the garbage liquor, or stick liquor, out through strainers in the bottom doors. Removal of this liquor reduces drying time, decreases burning or scorching while drying, and improves the results during extraction. Drying is accomplished by means of steam jackets along the bottom and sides of the tanks.

After drying the tankage is dumped into flight conveyors and moved to extractors for the next operation. Four extractors hold 2½ to 3 tons each of tankage, which is washed with naphtha to remove grease. The grease and naphtha are pumped to evaporators where the naphtha is distilled for reuse and the grease pumped to storage tanks.

The extracted tankage is then separated into feed and fertilizer base materials. In the old plant, this was accomplished by a modified vacuum cleaner principle which lifted lighter constituents to be sold as feed and left heavier materials behind to be ground and sold as fertilizer. At present new extractor and feed separation equipment is being installed which will give the plant a great deal more capacity at a lower operating cost. The extractors are of conventional design for meat tankage processing, and the feed machines will be vibrating screens using approximately 20-mesh screen cloth.

A great deal of development work has been done which indicates that the 350-degree cooking temperature is not necessary for stabilization of the tankage. A process more like dehydration is being considered for pilot plant tests as soon as the extraction and feed separation installation is completed and in operation. Since cooking tanks rapidly depreciate, because of corrosion and abrasion, the new process has possibilities of avoiding the major item of upkeep cost. In addition, there should be less degradation of by-products with an improvement in salability and revenue.

Advantages

The four chief advantages claimed by the Indianapolis process are as follows:

1. There is very little final residue to be taken to dumps. Separated glass is sold and certain other types of refuse are reclaimed. Tin cans, bottle caps, wire, rags, paper, and the like, amounting to about 7 cubic yards per day, are dumped.

2. The process disposes of refuse in a thorough manner that turns waste material into economically useful products, thus providing a permanent means of disposal.

3. These products are processed in a manner that eliminates completely any public health hazard.

4. The process accomplishes this with the production of sufficient revenue to pay for its own upkeep cost; in normal or above-normal years it will pay for part of other Sanitary District services thus resulting in a less severe drain on the taxpayers' funds.

Superintendent W. H. Frazier examines two samples of grease that are the result of treatment of the garbage by cooking, skimming, and steam "pressing."

Advice on Your Fire Department's Problems

Present and future problems facing the fire service must be met by fire chiefs.

By JOHN H. ALDERSON
Chief Fire Department
Los Angeles, Calif.

FIRE CHIEFS wonder at times how well our problems are understood by those city officials who are our supervisors and by those officials with whom we must work and cooperate.

Fire Equipment

Heavy apparatus cost has increased 40% to 45% over pre-war levels. Apparatus which cost the city of Los Angeles $15,000 in 1940 now costs $21,000 to $22,000, with deliveries 18 to 24 months from time of contract. With the expectation of still higher prices, we urge cities, to the extent of their financial ability, to place orders now for apparatus to replace outmoded equipment and for additional necessary apparatus.

Hose is the life-line of any fire department. Our operations can be no more successful than the dependability of the hose in use. Hose deteriorated during the war years, but good hose and good delivery dates can be had now. Hose has increased in cost. In 1941, Los Angeles paid 63 cents per foot for 2½-inch hose which now sells for 97½ cents per foot. We pay 66½ cents per foot for 1½-inch hose which cost 38 cents per foot six years ago. Hose purchased today is equal and, in some cases, superior to pre-war hose. Some cities are paying as high as $1.75 per foot for the same grade of hose delivered to Los Angeles for 97½ cents per foot.

Two-way radio is the greatest improvement in the fire service since motors replaced horses. Air channels are open for your fire department. If you have not installed a complete two-way radio system, your department is backward. This system will increase the effectiveness of your apparatus and the efficiency of your manpower. Handie-talkie radio is available and, at fires, will place your men under complete supervision of your officers and make them constantly available.

Breathing apparatus permits firemen to enter gas-filled rooms or compartments where ordinarily a human being could not live. The growth of industrial activities has increased the need for breathing apparatus. You should now purchase the improved compact equipment developed and used during the war. Smaller, individualized breathing masks are now being developed which every fireman must have. They will help eliminate the burned lungs and seared throats to which our men have always been subjected.

New employes, almost without exception, are ex-servicemen, because of preferences given under Civil Service rules. Recruits entering the Los Angeles fire department are averaging 40% former commissioned officers in the Army, Navy, and Marine Corps. You may expect, in the future, efforts to increase the maximum age for entrance into your fire departments and efforts to decrease the physical requirements. With due respect to the veterans group, these efforts should be resisted. California law offers definite inducement for employes who join the military reserve organizations. Mandatory leaves with full pay are granted. Most of your personnel are young men and ex-servicemen eligible to join the reserves. Definite campaigns to enlist them are under way. This should have your attention. You may well find yourself without a fire department if the reserves are called into active service.

Universal military training acts are being considered in Washington. You all know how your departments were disrupted during World War II by an unwise selective service. Fire will be the chief weapon in the next war. We are told that the war will be on our shores and without notice. The California League of Cities should give thought to the retention of key municipal employes and exert its influence when Congress passes a selective service and universal training law.

Unions

Unionization sometimes presents problems. Intensive and, in many cases, successful efforts were made during the war to unionize California fire departments. There are indications that the union movement is not as popular with firemen as it was. If you have a union in your fire department, be sure it truly represents your personnel. Too often, these unions were started by disgruntled minorities and have served as refuges and sounding boards for the poorer element in the organization. Remember that you expect your fire chief to maintain morale and discipline. He cannot do this if you ignore him in dealing with his personnel, and if you listen to those elements which are attempting to disrupt the organization.

Following World War I, fire departments nation-wide passed from the one-platoon system, under which men were on duty continuously, to the two-platoon system, under which they are on duty one-half the time. Reduction in hours in industry and in other employment, allowances for overtime, and other benefits have brought a demand for the reduction of hours in the fire service.

Working conditions of firemen are now in a period of transition. Some departments have established a three-platoon system with a 48-hour week. Other departments have maintained the two-platoon system but have granted additional time off. This is the present trend in California. In Los Angeles, men are employed on a two-platoon system, working 24 hours on and 24 hours off duty, which would normally be an 84-hour week. However, additional time off has been gradually allowed until the individual man is now employed only 61 hours per week.

Fire Prevention

In some cities where additional time off has been granted, no provision for additional manpower has been made. Efficiency is reduced. If you are not prepared to furnish your fire chief with additional manpower, you should not accede to the requests of the men for shorter hours. During the use of the one-platoon system, firemen were little more than watchmen sitting in the station awaiting the call to a fire. This could be justified because of the hours worked. It cannot be justified if firemen are to be on duty 48 to 60 hours weekly with permission to sleep a portion of the time. Great numbers of men sitting idly awaiting an alarm for many hours each week cannot be warranted.

At the last Legislature, the Fire Chiefs of California, supported by the California League of Municipalities, attempted to secure legislation, retroactive in nature, to improve safety conditions in California hotel and apartment houses. This effort was defeated.

Some cities are attempting to improve safety conditions by local ordinance. These efforts are being opposed by the those who defeated state legislation.

We are all staying here in hotels. I throw to you a challenge. When you leave your room this afternoon, first look out the window. Measure the distance to the street. Leave the room. Imagine that it is 2 a.m. Elevators either have been discontinued, or only one operator is on duty. A fire has started below you. Remember that an open stairway immediately becomes a flue, charged with smoke, heat, and flames. Proceed to the nearest means of escape. Time yourself. When you have grown weary and hungry, stop at the desk and ask the management where the nearest fire escape is to your room. If you make this test and are satisfied, then you have nothing to worry about. If you are not satisfied, I suggest you support legislation to improve these conditions.

Fire prevention work, building inspections, and pre-fire planning should be increased. No department is adequately trained. You may expect increasing efforts to break down existing building codes under the guise of the housing shortage. Some of these efforts stem from the Federal Government and from federal officials. We urge that they be resisted. It requires little more material and little more time to build properly than it does to build improperly and unsafely.

Fire Insurance

Fire insurance as a business has been affected by federal court decisions, which, in effect, have made this business subject to federal regulation instead of state regulation. By Congressional act, federal regulation has been deferred. As a result, a considerable mass of legislation was introduced at the last Legislature affecting the fire insurance business. Although this may not be a direct responsibility of municipal government, I do point out that the insurance companies collect millions of dollars in premiums from your taxpayers and citizens. To a great extent, your fire departments are controlled in their development and planning by surveys made by engineers from the National or Pacific Coast Boards of Underwriters. These surveys determine your basic insurance rates. There is reason to believe that increase in fires and dollar fire losses may be used as reason for increase in fire insurance rates. This has already occurred in the East, particularly in New York State. It may be justified. It may not.

To my knowledge, no adequate study of the relationship among the cost of fire insurance, the rate, the premium and the return in California cities has been made from the standpoint of the municipalities themselves. I believe that municipal officials must in the future pay greater attention to this problem. You are expending millions upon millions of dollars for fire protection. As responsible city officials, I believe that you are entitled to know the whole story of the fire insurance business as it affects your communities. I urge closer attention and greater study on the question whether or not the money we spend for fire protection is spent wisely and in the proper direction, and whether or not the money spent by municipalities for fire protection is properly reflected in the insurance rates charged to the taxpayers of those municipalities.

From a paper read at the annual convention of the California League of Cities in San Francisco, September 24, 1947.

Television Shows in City Public Park

PASSAIC, N. J., a city of 65,000 population in the northern New Jersey industrial area, is believed to be the first municipality in the United States to provide television shows in its public parks.

An outdoor set, product of the Allen B. DuMont Laboratories, local television manufacturer, has been installed in the city's Third Ward Park. The set was the joint gift to the Passaic Park Department of the DuMont Company, the Arrow Electric Co., local appliance dealer, and Teldisco, Inc., television set distributor.

Costing approximately $2,300, the set has a 20-inch screen (approximately 2,200 square inches), the largest manufactured by DuMont. In the Passaic park it is mounted in an enclosed shelter of rustic design at the base of a grass slope forming a natural amphitheater. The site is the scene of the park department's traveling theater programs. The antenna is set up in a tall tree nearby for summer programs, and a second antenna has been installed at a nearby pavilion so that the set can be moved to the park's Hughes Lake shelter house for winter activity. The set's enclosure, approximately 9 feet high and 7 feet wide, is set on a concrete base and was constructed by the park department at little cost.

Erected under special plans drawn by DuMont engineers, the shelter and set are so placed that between 3,500 and 5,000 persons can view a telecast clearly and in comfort at one time. No matter at what angle from the screen the person sits (even as much as 75 degrees), there is no distortion.

Park department employes have been instructed in the set's operation and they supervise the telecasts. Electrical current to operate the instrument averages about $2 monthly at most, only direct charge to the city. Upkeep and maintenance of the set are provided free, at least for the first year.

The set made its debut in time for the first game of the recent World Series and drew big crowds daily.

STEPHEN J. MONCHAK

The outdoor television set installed in Third Ward Park, Passaic, N. J.

The City Tells Its Story—VIII

By HENRY DAVIS NADIG, *Director of Public Relations, New Regional Plan Association*

How one public relations organization serves a community in the N. Y. area

IF YOU have been following this department since it began last April (and I wouldn't be human if I didn't hope you have!), you know how strongly it stands for recognition of Municipal Public Relations as a full-time *official* operation. You recall the expressed belief that this will come eventually on a widespread scale. You remember the comment that MPR is going through its early trial stages.

While holding to the viewpoint that nothing can take the place of full-time MPR—an officer and a commission or committee giving time and work to a single municipality—I do believe that at this stage of developments there is much to be gained by giving an example of the activities of a public relations firm which has several municipalities among its clients.

The move to retain a public relations firm for carrying out your MPR is a progressive one. In many instances it may be found to be the best step at present—and may long continue as an answer for small municipalities. For others, it may be the awakening light that serves to bring the full dawn of complete and official public relations practice. The service performed by public relations firms for a number of municipalities has already paid dividends which will continue to accrue.

For the larger cities—those of 50,000 population and more—public relations problems are too vast and all-consuming to permit any modicum of divided attention in applying practical municipal public relations. Here, more especially, there should be direct, non-political responsibility to local government—which means the individual serving must be on the municipal payroll. He cannot best serve the city indirectly through answerability to an outside (or an inside) firm. Do you hire your public works director that way? You *do* not!

The Expert Is Required

It is as impossible for a village Board of Trustees or a City Council to do an out-and-out, thorough, competent municipal public relations job for the municipality, as it is for the Board or the Council to do the work of the Public Works department or the City Planning department. That's why you have your Public Works Director. That's why you have your City Planning Engineer. That's why you should have also your Municipal Public Relations Director.

And it is the realization of this parallel in municipal department operation that logically leads to extensive thinking of how best to get the expert into the public relations phase of municipal government just as you already have the expert in public works, planning, police, fire, and so on.

The professional public relations firm attempts to fill this serious gap in our municipal structure. While the larger cities for the most part have yet to achieve the full concept of municipal public relations and put it into prac-

This Month in ROCKVILLE CENTRE

Vol. III, No. 7 — September, 1947

RUSH COUNTY SEWER, RVC BOARD ASKS

Unless the Nassau County sewer disposal plant is built without delay, Rockville Centre taxpayers face expenditure of an "exhorbitant" amount of money to expand the village sewer plant, the Board of Trustees warned this month.

Replying to a letter from the Citizens Sewage Disposal Committee of East Rockaway, the Board pointed out that the RVC disposal plan was being operated well over capacity, and would be adequate to serve the village only a few years more at most.

"If the county sewer system is not constructed within a period of approximately five years, we will be forced to build an extension to our own plant at an estimated cost of $200,000, which will be an unnecessary expense to our tax payers." the RVC Board pointed out.

The Board agreed that in any such major undertaking, there would be differences of opinion but "it is our belief that we can and must have confidence in our county authorities to what is best for the county and its people as a whole." The Board took no stand on the question of whether the projected Bay Park site for the disposal plant was the proper one.

(Continued on Page 4)

ACCIDENTS RISE POLICE START DRIVE

Rockville Centre residents are smashing up their cars and causing injuries to themselves at a far greater rate than ever before. police records show The cause in the opinion of the police officers who have studied the various accidents, is 98% carelessness on the part of the drivers.

Oddly enough, many of the accidents occur at intersections close to the homes of the drivers. indicating that they are not heeding the Stop and traffic signs put there to prevent accidents Thus, RVC residents are taking a major part in the nearly 30% rise in local accidents over last year As a result, the Board of Trustees has instructed the police department to enforce strictly the traffic laws, particularly at intersections. Police Justice Moore has been asked to levy the maximum fines in cases where it is obvious that the driver has ignored traffic signals.

ANNUAL REPORT

Preparation of the second annual report of the Village of Rockville Centre is in progress. The report is being prepared by Kennedy Associates of Rockville Centre.

A recent issue of the monthly publication distributed with municipal light bills in Rockville Centre, N. Y. It is produced by a public relations firm retained by the village trustees as part of a program aimed to serve the people of the village as well as to aid the local government's relations with the public.

tice, some smaller communities are beginning to move ahead by taking advantage of what they consider a present opportunity. They are using public relations firms.

A Long Island Case

For our example of what such a firm does for a community, I am indebted to William A. Kennedy, Managing Director of Kennedy Associates, Rockville Centre, N. Y., who supplied details at my request. Rockville Centre (pop. 25,000) is one of the several municipalities for which the firm is public relations counsel.

(You will be interested to note, as details of this MPR illustration are set down here, some of the features of good MPR that have been pointed up in previous columns of this department.)

Regarding Rockville Centre, "we were asked to set up a public relations program, combining not only publicity for the community, but primarily good will between residents and the village government," writes Mr. Kennedy, adding: "Our contract states definitely that we are furnishing a service to the residents, *not* to the administration as a political unity."

Specific Projects

The first step was to put a staff man to work surveying every village department to determine its activities, accomplishments, budget, and problems. The firm then studied the survey and proceeded to set up a calendar of routine publicity so that each department has its own calendar of when to release news stories and so that each department is aware of what constitutes news in its particular activity.

Then came the monthly publication, and distribution with the municipal electric light bills to all residents, of a miniature newspaper summarizing the past month's village news and listing future events factually, without bias. ("We do not permit village officials to color this news in the least.")

A third significant piece of MPR came with the institution of a bi-weekly press conference when the mayor, village trustees, and department heads gather to meet representatives of daily and weekly press and answer such questions as reporters choose to ask. This helps to keep the press well up on all departments. Incidentally, the staff man of the public relations counsel prepares subjects for discussion to stimulate questioning.

Again in the publication medium, the counsel has gathered the material, had a staff photographer take pictures around the village, written the copy, and laid out the brochure that the village is now issuing for non-residents requesting information on Rockville Centre. The firm is now compiling, with its original survey as a basis, a report to the taxpayers of everything done in every village department in the past 12 months. This will go to every home —and you can be sure this column is going to be interested to see how this annual report turns out!

A Varied Activity

Now let's see, in addition to those more formal and regular MPR steps that the Rockville Centre counsel has taken, what other ways have been developed to help promote the community and to stimulate public interest in its own well-being?

For one thing, the firm is directing efforts toward inducing a New York City department store to locate in the village—as a benefit to residents and local shops. Data are being rounded up to show the village as a center of a 300,000 shopper population within an eight-mile radius.

It was recommended, after a series of accidents at grade crossings in the village, that the conditions at the crossings be publicized. Result: The railroad made changes, correcting the conditions.

As a further means of keeping the public informed, the firm schedules village officials for speaking dates at meetings of civic groups. It also suggests the formation of citizen committees to study certain problems and make recommendations to the village board. This makes for wider participation by the people in the conduct of village affairs.

The counsel also sits in with the committees concerned with the future planning and development of the village, for example on the question of the type of war memorial, improvement of transportation facilities, and other matters which may pertain to future needs.

Here is another important feature of MPR that has been established in Rockville Centre. A general clearing house for information has been set up in the municipal building—with the village clerk. All queries are channeled through him, making for quicker results to the inquirer.

Mr. Kennedy points out that "we try to give the public the information and assistance they look for, and not merely the information that the officials ordinarily would prefer to give out." He adds that "this independent attitude has paid dividends to the administration, because the residents know our attitude and, therefore, have faith in the administration."

And here is a final quote from Mr. Kennedy's letter. Says he: "We have found that when a local government keeps its people informed and asks the help and cooperation of residents, the result is better administration and a more satisfied constituency."

How's Your Town Doing?

As a regular reader of this column (!) you have recognized some old stuff here? Good! But what are you doing about it? The reason for going into this detail about one type of MPR set-up is to show you, again, what you're missing for your town—if you're not getting MPRtful. You can not only strengthen your municipal economy in the long run, but also you can eliminate a lot of those short-run municipal headaches! Try it and see!

You may find, if you look around, that you can take advantage of experience available—even part time—right in your own community. You don't have to go whole hog at the start; but, informally at least, you can make a beginning. Try it and see!! And if you want to query me, go ahead!

Recreation Congress Has Wide Attendance

MORE than 1,300 delegates from 43 states, Canada, and Hawaii attended the 29th National Recreation Congress in New York City the week of October 13th. Representatives from 382 United States cities were present, and Canadian delegates numbered 33 from 8 cities.

Lay volunteers and professional workers attended discussion meetings to consider such problems as personnel standards, training of workers, planning and development of areas and facilities, planning school buildings for community use, recreation in real estate and housing developments, teen age centers, recreation for older people, church recreation, and recreation services of state government agencies. A two-day industrial recreation conference was also held.

Proceedings of the Congress will be published in a separate volume, to be available from the National Recreation Association (315 Fourth Ave., New York 10, N. Y.) at $2.25 per copy.

In a letter to Howard Braucher, president of the National Recreation Association, for use at the Congress, President Truman wrote, "It is decidedly in the interest of the national welfare that so many local recreation agencies in cities, countries and towns, are providing the leadership and the financial backing necessary to insure wholesome recreation facilities."

Plastic Coatings for Sewage Works

By C. G. MUNGER
Director of Research
Amercoat Division
American Pipe and Construction Co.

FOR YEARS, the laboratories of many large firms have been engaged in intensive research in an effort to find protective coatings for concrete and steel subjected to sewage conditions. There was a great need for coatings that would withstand the corrosion developed in sewers because of hydrogen sulfide. In addition to hydrogen sulfide, very nearly any type of chemical or material can be found in sewage; therefore the problem confronting these laboratories was not only finding a chemically resistant material, but one which would also be resistant to micro-organisms such as bacteria and fungi. The parent company's work in the manufacture of pipe naturally made us greatly interested and active in this research.

Original Tests Made

Southern California was an excellent proving ground. It is close to some of the worst sewage conditions in the United States. Many of the outfall lines are long, in many cases the sulfate content of the water is fairly high, and the temperature is not low in the winter. Some of the original tests were made in the Centinela manhole of the Los Angeles Outfall, in which the sewage has traveled as much as fifty miles, requiring twenty-four hours to cover the distance. This great distance, coupled with the comparatively warm climate and the high sulfate content of the water in the area, contributed to the development of a large quantity of hydrogen sulfide gases. In addition, tests were made in the San Diego areas, where many of the pumping stations were below sea level with sewage accumulating in these pump chambers over a considerable period of time prior to being pumped out to sea.

The types of materials tested varied over a very wide range, including such materials as sulphur, coal tar, cumar resins, methacrylate resins, chlorinated rubber, bakelite resins, and several of the vinylite resins. Of these, the best of the basic materials appeared to be the vinyl resins because of their broad, inert characteristics covering both acid and alkaline materials as well as having a high water resistance. Another major item in using these materials was the fact that age apparently does not affect the above characteristics and in the many years of testing which we have done, we have found that, when properly compounded, these resins do not change appreciably due to age.

The above tests were conducted in several places in Southern California, the main testing areas being at the Hyperion screening plant of the Los Angeles Outfall, at the ocean manhole of the Anaheim-Santa Ana Outfall, and at a pump sump located on the Island of Coronado in San Diego Bay. Of the three, the Coronado pump chamber was used as a final testing ground because of its extremely severe conditions and because of the fact that we were able to by-pass the sewage from this chamber completely. The interior was fully recemented and large areas of experimental coatings were applied to the ceiling and walls. In this way the coatings were tested under actual application conditions and not just as laboratory samples. A large number of tests have been made in this pump chamber; however, originally it was divided into thirteen experimental areas.

Hydrogen sulfide, of course, is naturally the basic cause of most sewer corrosion. The hydrogen sulfide is formed in sewage by the action of bacteria, not only on the organic matter in the sewage, but as well by their action on the sulfates in the main water supply. Normally, when the sulfate content of the city water supply is low, the development of hydrogen sulfide is also low. There are only a few types of bacteria that can bring about this reaction. The organism primarily responsible is *vibrio desulfuricans*, which derives its energy from the dehydrogenation of many compounds from the reduction of sulfates. Essential factors in the process are the absence of oxygen, the presence of sulfates, the presence of organic materials, the temperature (the higher the temperature, the greater the rate of hydrogen sulfide production), and the number of organisms. Presence of a large number of sulfate-reducing organisms is important in the rate of hydrogen sulfide production. These organisms are originally not dispersed in sewage, but are localized in the slimy growths and deposits in the sewers and on the sewer walls. This general type of bacteria is anaerobic.

There is another type of bacteria in sewage which aids in corrosion. This is the aerobic bacteria, which requires oxygen and which actually will oxidize sulphur compounds to the sulphuric acid stage. Besides the sulphur oxidizing bacteria, however, it is felt that the actual presence of hydrogen sulfide in sewers, by its chemical combination with water and oxygen, creates many of the corrosive conditions.

When Oxygen Is Limited

In the case of a limited oxygen supply, the hydrogen sulfide forms iron sulfide, which in turn reacts with water to form ferrous hydroxide or a hydrated iron oxide. With the addition of water and oxygen, the ferrous hydroxide can further react to ferric hydroxide, which can be dehydrated to the ordinary ferric oxide or rust. Most of the corrosion products formed, however, will probably be in the form of ferric hydroxide.

Where there is an unlimited supply of oxygen and moisture, the hydrogen sulfide is oxidized to sulfurous acid, which in turn reacts with iron to form ferrous sulfate, and which hydrolyzes to form ferrous hydroxide and regenerates sulfurous acid. Ferrous hydroxide can then, of course, react with water and additional oxygen to form ferric hydroxide.

In sewerage corrosion, a great deal of the sulfide reactions take place with concrete when sulfurous and sulfuric acids are developed in sewage. The reaction is particularly troublesome since, as the reaction takes place, the volume of the reaction product increases five times over and above the original volume of the concrete. Because of this expansion, coatings are pushed from the surface, and clay tile liners are bulged and disrupted and actually dropped from the surface, so that besides the general disintegration of the concrete structure itself, the physical force exerted by the expansion adds to the corrosion problems involved.

Types of Coatings Developed

With a careful study of the above chemical reactions and the screening of a larger number of experimental products, three coatings were finally developed which appear to meet the majority of corrosion problems which exist in the sewerage field. All of these coatings are based on vinyl synthetic resins, which are the most resistant resin materials available at the present time. They are not only chemically resistant but are also tough and resilient, and age seems to have no effect on these properties. Each coating is resistant to such materials found in sewage as animal fats and greases, petroleum products and acids and alkalies

from industrial wastes. Each material was subjected to sulfuric acid in strengths of 1% to 50% for periods ranging from many months to several years. In addition, they were subjected to the worst possible hydrogen sulfide conditions, as described earlier in this article.

On concrete surfaces, adhesion must remain unimpaired by both moist alkaline conditions at the concrete interfaces and moisture transfer of the coating itself. Proof of the ability of these coatings to do this lies in the fact that many successful applications have been made on underground tanks below the ground-water level, and after six years, performance is still excellent.

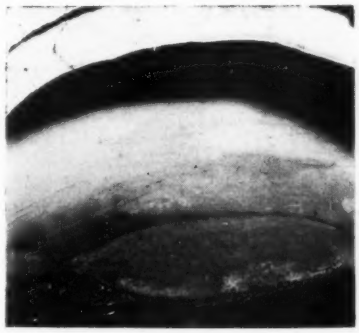
The problem of coatings withstanding hydrostatic back pressure in underground structures can be serious, since the pumping chambers or sewerage lines sometimes operate where the water table for the surrounding country is higher than either the pumping chamber or the line itself. Under these conditions, it is necessary for one coating applied to the interior of the pipe to have sufficient adhesion to the concrete surface to resist any possible pressure created from the water on the outside. A test was developed which consisted of using very porous concrete pipe made into a column 23 feet high, the exterior of which was coated with a vinyl coating. By filling the column with water, a pressure of approximately 10 pounds per square inch was created at the bottom. There was no leakage of water through the coated pipe, and at no time, even after several months, was any leakage noted over the coated portion. In order to determine whether the water was actually at the back of the coating, the coating was cut in several spots to determine the adhesion and to see whether the water was actually making contact. As soon as the coating was cut, water tended to leak at the point.

Function of Each Coat

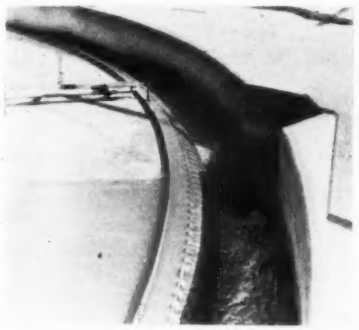
The first of the three coatings developed was for general maintenance use around sewage treatment plants, screening plants, and pumping stations. This single-solution coating was designed for use on the exterior of elevators, structural steel, tanks, ground walls, walkways, floors, etc. This coating is a thermoplastic type based on synthetic vinyl resins. It is usually applied in three coats and has excellent acid and alkali resistance when applied over a properly prepared surface of concrete, steel, or wood. It seals these surfaces with a tough, abrasion-resistant film and has a high degree of resistance to oxidation and corrosion.

The second coating, a multiple-solution coating, is applied in five or more coats. The number of coats may be increased, depending upon the severity of the exposure. This coating was developed for use in more severe corrosive conditions found in sewerage systems in such areas as the interior of steel sludge elevators, as a coating for the metal parts of clarifiers or similar sewerage equipment, and as a coating for concrete in rotary screen sumps or other severe gas areas which are not confined. This coating is a thermoplastic type also based on synthetic vinyl resins and has excellent water and moisture resistance along with resistance to acids, alkalies, and severe oxidizing conditions.

A standard brick-lined manhole without a protecting coating, showing the sulfide disintegration of both the brick and mortar.



A five-foot brick-lined manhole, coated with Amercoat #16 plastic coating. Note the excellent condition of the surface after two years' service. This manhole is the next one down the line from the manhole shown above.



A close-up of the raw sewage clarifier at Anaheim, Calif., showing the scum rate and the effluent channel. All metal parts were coated with Amercoat #23 and they are in excellent condition after two years' exposure.

The third coating developed was a troweled multiple-solution coating applied in four to six coats, depending upon the severity of conditions. This coating is recommended for the interior of manholes, pump chambers, and similar structures where the coating is subjected to continuous and confined gaseous conditions. This coating is a thermoplastic type based on vinyl synthetic resins. It has the same acid, alkali, and water abrasion resistance as the multiple-solution coating described above. However, since it is designed for trowel application, a much heavier and thicker coating may be obtained with an average thickness of approximately 1/8 inch.

An outstanding example of the success of the troweled multiple-solution coating is the application made to a section of the pump chamber in the city of Coronado, Calif., more than four years ago. On a recent inspection the coating appeared to be unchanged after all this time. The gas conditions in this pump chamber were extremely severe, and uncoated concrete was penetrated from 1 to 2 inches per year by hydrogen sulfide and the resulting sulfuric acid. In contrast to this, it was found that the concrete which was coated was solid and unchanged.

The above three plastic coatings have been found suitable for almost any condition found in a sewerage plant or pipeline. The selection of which of these particular coatings to use is dependent only on the severity of the conditions existing in a particular installation. These three materials are the Amercoat coatings, manufactured by the Amercoat Division of the American Pipe and Construction Co., P. O. Box 3428, Terminal Annex, Los Angeles 54, Calif., which has long been keenly interested in developing plastic coatings for use in sewerage. These coatings are being used on many large sewerage systems throughout the United States to protect installations from the damages of corrosion. This development of plastic coatings for sewerage has only come about through the cooperation of research chemists and sewerage engineers in combining their knowledge of the problem.

Gary Gets Results

. . . in the economical operation of its sewage treatment plant

THE SIXTH YEAR in the operation of the main sewage treatment plant at Gary, Ind., shows how the combination of good design, good construction, and careful operation has made it possible to produce consistently a final effluent carrying very few solids and a low 5-day BOD count, and at the same time to get real economy in operation through the utilization of sludge gas as a source of power.

This was a banner year for the big Main Sewage Treatment Plant forming the backbone of the Gary, Ind., Sanitary District. The plant is designed for a population of 170,000 or a flow of 40 mgd. The 1946 annual report of the District gave these significant figures:

Sewage pumped: 20.38 mgd average; 203.8 gals. per capita per day.

Suspended solids removed: 10,106 tons, or 0.255 lbs. per capita per day, more than in any previous year.

Five-day BOD removed: Average 0.299 lbs. per capita per day; second largest yearly removal.

Gas production: 1.56 cu. ft. per capita per day average; 2.9 cu. ft. per lb. of suspended solids added; 5.5 cu. ft. per lb. of volatile solids added; second largest yearly production.

Value of gas used: $23,238; greatest for any year.

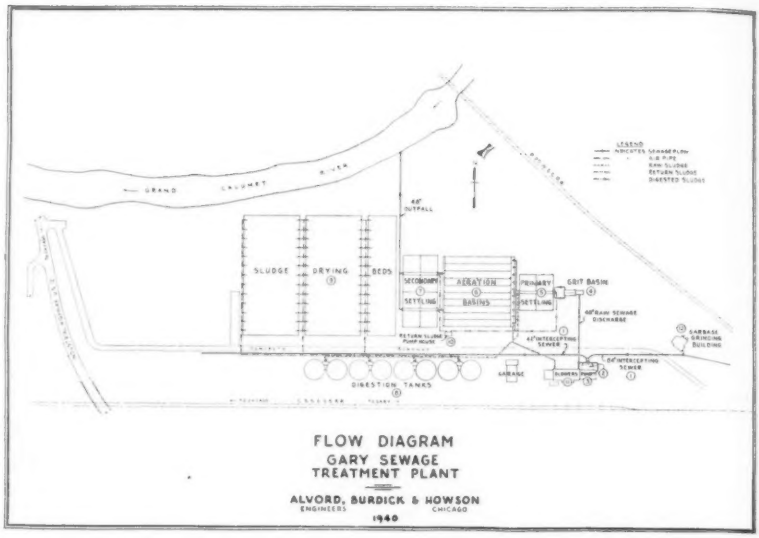
Air blown: 0.43 cu. ft. per gal. of sewage treated; next to lowest for all years.

Removal of suspended solids: 98.65%; higest for any one year.

Reduction in five-day BOD: 92.99%.

Operating costs: $7.253 per capita; $72,527 total exclusive of bond retirement and interest.

Power used: $8,197 for 579,580 kwh; $929 for supplemental gas; power costs 39% less than 1941.



FLOW DIAGRAM
GARY SEWAGE
TREATMENT PLANT

ALVORD, BURDICK & HOWSON
ENGINEERS CHICAGO
1940

The plant received sewage through two intercepting sewers, one 84 and the other 42 inches in diameter. Five Worthington pumps, with a total capacity of 90 mgd operating against a 35-foot head, lift the sewage so that it can flow by gravity through the plant. The pumps are protected by five 25-inch Chicago Pump comminutors with an hydraulic capacity of 60 mgd. Three of the pumps, each capable of handling 20 mgd, receive power from engines using sludge gas, and two, each of 15 mgd capacity, use electric motors.

The pumps lift the sewage from the suction conduit to the grit chambers. These chambers, equipped with Link Belt screw conveyors and collectors, provide 1½ minutes of detention at the design flow rate of 40 mgd.

The sewage then receives primary clarification in four 75-foot Dorr clarifiers that are designed to provide a detention period of one hour. Following this, it proceeds to the activated sludge section of the plant for secondary treatment. Ten aerators of the straight flow-through type induce aerobic decomposition within the sewage during a 6-hour detention period. At present, however, only five aerators are used, with aeration furnished through 3-inch-by-24-inch Chicago Pump Co. diffuser tubes of the fixed type, spaced alternately on 16-inch centers on a 12-inch to 6-inch air header. Each of the 10 aeration tanks is 300 feet long, 30 feet wide, and has a 16-foot water depth. There are 219 different tubes per basin.

To provide final settling, the plant uses eight Dorr secondary clarifiers similar to those used for primary treatment. These tanks hold the sewage for two hours, providing a settling rate of 900 gpd per square foot. The clarified effluent is allowed to overflow at the rate of 11-2/3 gpm per lineal foot of weir. Three motor-driven Fairbanks-Morse centrifugal pumps, with capacities of 2,310, 3,150, and 5,040 gallons per minute, each returns a portion of the activated sludge to aerators and excess sludge is sent to the primary clarifiers.

To provide aeration for the activated sludge portion of the treatment, the plant uses two 7,000-cfa Roots Connersville rotary positive displacement-type blowers connected directly to 300-hp Cooper Bessemer gas engines, and three motor-driven centrifugal-type Elliott blowers with capacities of 5,000, 7,000 and 9,000 cfa each. Air is filtered by oil reservoir filters and a secondary cellulose filter with a capacity of 28,000 cfa, both products of the American Air Filter Co.

The plant keeps close check over all flow operations through 33 Builders Iron Foundry meters, 11 orifice type and 22 venturi tubes.

To treat the sludge, the plant has eight Dorr-equipped digestion tanks in the multi-digestion system. All tanks are 90 feet in diameter, with sidewall depths of 20 feet. Five of these tanks, used as primary digesters, are covered with flat concrete roofs and heated. The other three, operated as secondary digesters, have self-contained gas holders of 60,000 cubic feet capacity each and are not heated. The total capacity of all digesters is equivalent to 6½ cubic feet per capita for 170,000 population. Sludge-drying facilities consist of 65 drying beds, 42 by 125 feet, equipped with narrow gage tracks. The air-dried sludge is given to the public. Last year nearly 2,000 people in Gary took the

plant's entire production of more than 5,200 cubic yards.

The chief difficulty that the Gary plant has to face is that of fine sand filtrating into the sewer system. The sand enters the plant at an average rate of 8.18 cubic feet per million gallons, or more than four times the amount that most plants must handle. At times the volume of grit exceeds 3 cubic yards per million gallons. This results in excessive wear on the comminutor plant, raw sewage pumps impellers and on the grit removal equipment.

To keep the present impellers in service until new ones could be delivered the operators have welded ⅝-inch blades to the existing impellers and covered them with a ⅛-inch coating of rubber. The rubber is applied to the impellers either with a brush or spray. Each coat is allowed to dry before applying a succeeding coat until a thickness of ⅛-inch is obtained. Infrared lamps dry the coatings.

Impeller Wear

Inspection of the rubberized impellers at two-weeks intervals shows that there is apparently no wear noticeable on the impellers except on the leading edges, where foreign materials such as pieces of rags lodge on the blades where they are in close proximity to the guide rings. There are some nicks in the coating at this location. The results of the test are now being watched with interest, for it is possible that rubber covering of the new impellers will be indicated as an economic procedure.

The plant is managed by a Board of Sanitary Commissioners that includes Otto V. Gray, Harold E. Beine, and William P. Cottingham. The operations are under the direct supervision of W. W. Mathews, Superintendent, whose recent annual report to the Commission formed the basis for much of the material in this article. The plant was designed by Alvord, Burdick and Howson, Chicago consulting engineers.

The Main Sewage Treatment Plant handles substantially all the city's sewage. However, the Commission operates, in addition, one small Imhoff-type plant using trickling filters and three small sewage lift stations.

When Should Possible Interest in Contracts Disqualify a Commissioner?

A DIFFERENCE of opinion between Mayor Fletcher Bowron and City Attorney Ray L. Chesebro, of Los Angeles, as to a proposed appointment by the Mayor, was resolved on October 3 by the City Council, by a vote of 9 to 6, in favor of the Mayor.

The case is of importance as bearing on the question of how remote an interest in possible action by a public body ought to disqualify an appointee for service on that body.

The Mayor had nominated Roy H. Beaton, executive vice-president of the California Fish Canners Association, to membership on the Los Angeles Board of Harbor Commissioners. The appointment was opposed by the City Attorney. In a communication dated September 29, Mr. Chesebro wrote to the Mayor, in part:

It should be remembered that an "interest" of a commissioner to be disqualifying need not be pecuniary, financial, or direct. Any "interest" of a commissioner in a contract, transaction, or matter before the board of which he is a member or the department with which he is connected for official action is sufficient to disqualify not only that commissioner but also the whole board of which he is a member and the department with which he is connected from acting upon such contract, transaction, or matter in which such "interest" exists.

Mayor Bowron's comment, in a letter to the City Council, dated October 2, 1947, was as follows:

At no time has any charge been made or question raised as to the honesty, integrity, or ability of R. H. Beaton. Every one who knows him must feel as I do that, if confirmed, in the discharge of his official duties he will act only in the interest of the city. Furthermore, by reason of his experience and knowledge of the harbor and harbor affairs, he is the best qualified man I know of to serve on the Board, particularly during the next few years when millions of dollars will be expended for improvements and efforts will be made to increase seaborne commerce.

The position taken by the City Attorney presents a very serious matter with reference to the service of qualified citizens on the various commissions and it may well affect the legality of acts of the City Council in various matters. I have carefully studied the several opinions of the City Attorney and have read the cases on which he relies. These adjudicated cases by the Appellate and Supreme Courts of our state are based, not upon acts of members of appointed boards, but upon those of elected members of city councils and boards of supervisors who were presumed to have an interest in contracts authorized by the legislative bodies of which the persons affected were members and in each case the circumstances indicated a direct interest.

The legal question relating to the disqualification of Mr. Beaton is one upon which legal minds differ. I feel that the City Attorney has gone entirely too far and has attempted to declare policy rather than interpret existing law.

I recommend that the appointment of Mr. Beaton be confirmed and that thereafter, if any question is raised, a test case can be brought and the matter adjudicated and clarified by the courts. If, on the other hand, the City Council votes against confirmation, I will accept this as a declaration of policy that no one having any possible, even an indirect, interest in any action of the Board of Harbor Commissioners should be a member of that body. This, of course, would preclude many citizens residing at the harbor. Anyone who owns property could not serve on the Board because the purchase or sale of land would affect the market price of his holdings. Anyone renting would have an interest to the extent that rentals fixed by the Board for city-owned waterfront land would be reflected directly or indirectly with reference to rental values on other properties. Anyone engaged in business, handling materials or commodities transported by water, could be said to have an interest in the tariffs fixed by the Board. Numerous persons are interested directly or indirectly in the fishing fleet as well as the canning industry. In fact if we are to follow literally the opinion of the City Attorney that an interest of a commissioner to be disqualifying need not be pecuniary, financial or direct, practically all residents of Wilmington and San Pedro are interested in the harbor and in many, if not most, of the actions of the Board of Harbor Commissioners.

Discussion of this letter by the City Council was followed by the 9 to 6 vote already mentioned, concurring in the Mayor's point of view.

Preservation of Texas Wildflowers

TEXAS has a unique heritage of lovely and distinctive wildflowers, which are rapidly being depleted by agricultural and industrial expansion. The Roadside Council would like to preserve these rare flowers by distributing wildflower seeds throughout the state to citizens, who could plant them in their gardens, and to public officials for cultivation in public parks and playgrounds. The Landscape Division of the State Highway Department has illustrated the possibility of such a conservation program by the planting of the many flowers which bloom along all state highways in the spring.

Hints from ICMA for Convention Planners

AMONG the many conventions in which editors of THE AMERICAN CITY participate as speakers or onlookers, the annual conference of the International City Managers' Association makes an exceptionally favorable impression.

Last month's meeting in Coronado, Calif., strengthened that reaction. Both in efficient planning and management of the convention and in participation by the delegates, the standards were high.

The badges helped. For some years now ICMA has been issuing (for all advance registrants) a hand-lettered badge of the style here shown, measuring 3 by 2 inches. They cost the Association about 10 cents each, but avoid many dollars' worth of embarrassment to delegates lacking telescopic eyesight.

At the Coronado meeting another device—uncommon, if not unique—was the handing to each delegate when he registered the one-page mimeographed statement here reproduced. ICMA has no copyright on this idea, and credits some of the wording to other sources. It may, therefore, be freely adopted or adapted by other organizations.

In advance of the convention, the headquarters office had asked all members to suggest subjects they would wish to have discussed, and these suggestions were made available for the various group discussion leaders.

Other features of this recent City Managers' Conference merit favorable comment:

1. There was a wise combination of general meetings and discussion sessions.

2. The sessions began and ended approximately on time.

3. A snappily written "Conference Snooper" was issued each morning.

4. At the final session, all the delegates were given the benefit of brief summaries of the 18 group meetings.

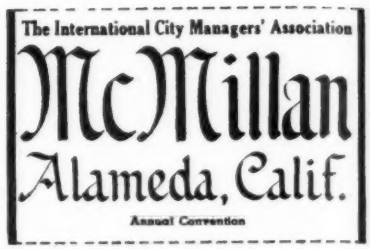
5. There was an excellent balance between conference sessions and well-planned sight-seeing trips.

6. The headline speakers were not merely "big names"—Governor Earl Warren of California; Provost C. A. Dykstra of the University of California, Los Angeles; and Richard S. Childs, of New York. All three had messages of practical value to the delegates.

The Coronado meeting was attended by 149 city managers and by about as many others—assistant managers, wives of delegates, and others.

As officers of the International City Managers' Association for the ensuing year the convention elected: President, C. A. Harrell, City Manager, Norfolk, Va.; Vice-Presidents: John B. Atkinson, City Manager, Cambridge, Mass.; V. J. Hultquist, City Manager, Alcoa, Tenn.; E. A. Ingham, City Manager, Alhambra, Calif.; George F. Liddle, City Manager, Muskegon, Mich., and Lowell W. Monroe, Township Manager, Mt. Lebanon, Pa. The carry-over members of the Board are ex-presidents Don C. McMillan, N. R. French, L. P. Cookingham, Roy S. Braden, and E. L. Mosley.

Clarence E. Ridley will, of course, continue as Director, with headquarters at 1313 East 60th St., Chicago, Ill.



Type of badge used for all delegates at annual conferences of the International City Managers' Association. This one was worn at the Coronado meeting by the 1946-47 president, Don C. McMillan, City Manager of Alameda, Calif.

The one-page statement given to each delegate to the ICMA Conference.

THE INTERNATIONAL CITY MANAGERS' ASSOCIATION
Welcome to the 33rd Annual Conference

Now that you are here--

Attending a conference profitably is hard work. The first step is to recognize conference-attending as an opportunity. Don't lose sight of the main idea--to bring back something of future benefit. Before the conference opens take a good look at the program. Decide which sessions hold promise for new ideas or information that you can use. Then participate in those sessions

Even listening closely isn't enough. Try to analyze, to translate the speaker's ideas into terms applicable to your own problems. Participating means taking part mentally, trying to interpret from the speaker's mannerisms, tone of voice, or asides, meanings that may not be obious from the words themselves. Alert listening breeds questions, stimulates additional ideas to bounce off the other minds assemblod. When the discussion period comes, ask those questions Express those ideas. Participate!

What do you get out of it? You may get able people thinking about problems important to you or your city. Helpful ideas pop out from the most unexpected sources. Your ideas and questions invite others to meet you, talk with you later, exchange more ideas, explore new areas. In between the formal conference sessions, circulate. Talk to people, let people talk to you Get interested in their problems and get them interested in yours

Don't eat by yourself--and don't spend time with associates from your own "group." Seek new contacts, unfamiliar ideas. The essence of a conference is people. It's a place where people come together for a purpose. Shun the people and you miss the purpose.

As the meeting runs its course, jot down notes--notes of new information picked up, where to go for further data; notes on casual conversations of human or city interest, notes of names, addresses, or ideas for your own work, stimulated by some paper, some discussion, some chance remark Jot them down--promptly. They'll be result-producing memoirs for later culling

When you get back home, finish your conference-attending job If your council doesn't ask for a memorandum about the meeting, write one anyway Don't just give a transcript of your jottings. Make a list of ideas and information resulting from the conference which have some meaning in relation to your own work, your city's interests and problems.

When that memorandum has been made just as practical as possible, when it has been written and delivered, when you have followed through to action as best you can all the ideas you meant to do something about then you are attending that conference--and not until then.

Street Littering Unlawful

KANSAS CITY, Mo., is proud to report that for the last ten months it has faithfully enforced its ordinance making it lawful to give tickets to people found littering the streets. From January to October a full-time enforcement officer has been employed who, in addition to maintaining this law, sees that trash-hauling and dumping regulations are adhered to. To date, this officer, with the assistance of the Police and Public Works Departments, has issued 171 tickets to violators.

Unique Charter for Baton Rouge

A UNIQUE plan of government, consolidating the City of Baton Rouge and the Parish of East Baton Rouge, La., was ratified by popular vote in August. This plan was framed within certain limitations imposed by the enabling constitutional amendment passed last November.

The charter extends the boundaries of the city to embrace an urban area of about 30 square miles, as against 4 in the present city, and a population of about 106,000 instead of the present 30,000. In this urban area municipal services—police protection, fire protection, garbage and refuse collection and disposal, street lighting, and maintenance and operation of sewers and sewerage works will be provided. Two industrial areas are established in which municipal services will not be rendered by the city and which will continue to enjoy a tax rate no higher than that of the rural area. The remainder of the parish is designated as the rural area, in which the above-enumerated municipal services are not to be rendered except through the medium of special districts.

The charter provides for a parish council and a city council; the parish council to consist of seven members elected from the urban area and two from the territory outside the new urban boundaries, and the city council of the seven members of the parish council elected from the urban area. Thus the continuity of the city and parish governments is assured, the rural area is given a voice in matters of special interest to it, and there will be unified control of the whole territory.

A Mayor-President

The chief executive will be known as the mayor-president and will be elected from the parish at large. He will appoint the director of finance, the purchasing agent, the personnel administrator, the director of public works, and fire and police chiefs. The most modern financial and budgetary procedures and purchasing methods are prescribed, the cost to be shared equally by parish and city.

A unified department of public works is established, to be supported by city and parish. It will be headed by a director of public works, whose salary will be paid by the parish. The divisions of engineering, street maintenance, public-building maintenance, and central garage will be supported by the parish; and sewer maintenance, refuse collection, and inspections by the city. However, the cost of operating the division of public-building maintenance and central garage will be covered by charges against the departments, offices, and agencies using the services.

Modern Personnel System Established

A modern personnel system is set up for city and parish, excepting the police and fire departments which are already in a state system, with a personnel administrator in charge, to be appointed by the mayor-president and a personnel board to make rules, adopt a classification plan, hear appeals, investigate employment conditions, and report to the parish council. The personnel system will be financed by the parish. The charter also provides for setting up an actuarially sound pension system.

A planning commission is established which will also serve as the city's zoning commission, and which is charged with the preparation of capital budgets for both parish and city. The recreation and park commission, established by constitutional amendment adopted in 1946, is given jurisdiction over all park and recreation activities.

Because the offices of sheriff and assessor are established in the State Constitution, it was impossible to modernize the assessing procedures or establish a satisfactorily unified police department. A police department for the urban area, under civil service, is included in the new charter, leaving the rural area under the sheriff. The charter provides that the city council shall, immediately after January 1, 1949, provide for a bond issue to bring the very inadequate fire department up to par.

The Louisiana constitution limits city taxes to seven mills and parish taxes to four mills, except as additional levies are voted by the people. Although the industrial area taxation is thus limited to four mills, the charter provides that the proceeds of at least three of the four mills in the industrial areas shall be allocated to the city, which will be of very great assistance in enlarging and extending needed municipal services.

Home Rule Provided In Charter

The adoption of the new plan of government brings home rule to the city and parish. No longer will it be necessary to secure a constitutional amendment or special act when a change becomes necessary. The charter provides for its own amendment by popular referendum on proposals submitted by the parish council or by petition.

The charter was framed by the City-Parish Charter Commission, representing the city, the parish, the State Department of Public Works, the University, and the Board of Education, with the technical assistance of Dr. and Mrs. Thomas H. Reed, well-known municipal management consultants.

Incentive System Works in Michigan

THE production incentive system, long popular in some phases of private enterprise, is being used in Michigan's state government and meeting considerable success. Thomas J. Wilson, State Civil Service Director, has praised the system and offers to back any other state agency that wishes to try it. This type of program is unusual in government.

The new system, being used by the Department of State in preparation for a new procedure for handling automobile title and license records, was originated by Harold Thompson, Michigan's Deputy Secretary of State. Mr. Thompson faced the task of hiring and training 120 Addressograph operators to remake a new file of automobile license records numbering approximately 2,000,000 names. The complete job must be finished by December 1. Working with civil service officials, Thompson devised an incentive program in which beginners would start at $135 per month, with increments in salary based on proficiency. Some of the more expert trainees have already reached a peak of $160 per month. In addition to monetary rewards, the top incentive is permanent employment. The 30 best operators will be retained on the staff to continue operation of the embossing machines.

Other state officials have marveled at the productivity of the recruit workers. Even experts who assisted in the installation of the new machine system are surprised at the production records of the untrained staff.

How Clean Should a Street Be Kept?

One of Cincinnati's fleet of mechanized street sweepers.

By **ARTHUR LEHRMAN**
Assistant Engineer
Highway Maintenance Division
Cincinnati, Ohio

IN CINCINNATI, street-cleaning standards represent a compromise among apparent cleanliness, proper sanitary considerations, day-and-night service requirements, financial or budgetary restrictions, and general citizen satisfaction. Of these, the last factor—that of general citizen satisfaction—is our most important barometer. We consider operations to be satisfactory when less than 5% of all complaints concerning street conditions deal with matters of street cleaning. Basically, streets are kept as clean as the public demands.

From a cleaning standpoint, we recognize two types of streets: those which may be mechanically cleaned and those which must be cleaned by manual methods. Frequent mechanized services at reasonable cost are possible only where pavements and gutters are smooth and curbs are in good alignment, a condition which fortunately prevails in not only the urban areas, but also in most of the residential suburban areas in Cincinnati. Lower types of streets necessitate employment of manual methods but generally need less frequent cleaning. We furnish street-cleaning services only to those streets with curbs and gutters.

Sources of Litter

Analysis of the contributing sources of street-cleaning costs in Cincinnati over the past five years reveal the following facts:

Sixty-seven percent of all costs for gathering and removing general street litter are attributable to all persons within the city, including mercantile and manufacturing establishments. Of this percentage, nearly one-third arises from faulty handling of litter by private sources to such points where removal is accomplished and from the practice, on the part of merchants, of sweeping dirt from sidewalks to street pavements.

Fourteen percent of costs arise from the removal of snow by mechanical and chemical means and from snowplowing.

Three percent of the total cost may be charged to special spot cleaning to remove localized debris and to cleaning muddy areas caused by surface drainage during periods of heavy precipitation. This includes an estimated 1.6% directly chargeable to spilled bulk materials arising from trucking operations.

Nine percent is for leaf removal in suburban areas.

Three percent is for alley sweeping and flushing in a relatively restricted area in congested districts. Under ideal conditions it would be possible to reduce to approximately 1%.

One percent is for "high-water" street cleaning made necessary by local or general stream flood conditions.

Six percent is for cleaning abrasives used in controlling the winter slippery-street conditions.

One percent is for cleaning up public market places occupied by licensed vendors under leases.

The above cost percentages represent average local conditions. Their significance lies in indicating at a glance where possible economies may be made. Remember, however, that preventive measures may, under certain conditions, be inadvisable, especially if the general welfare of the community is adversely affected. In any community a certain amount of litter is to be expected as the result of business activities, which are the commercial life-blood of the city.

Our street-cleaning costs are accumulated and computed by means of an I.B.M. tabulating-machine punch system. We have found this system satisfactory since it affords a more detailed break-down of the various street cleaning operations, it eliminates posting, it is more accurate, and it serves as a permanent record with less space required for storing these records.

The section is relatively well mechanized and has at its disposal the use of the following equipment:

1 machine sweepers (92" broom)
4 machine sweepers (68" broom) patrol-type machine
1 machine sweeper (64" broom) patrol-type machine
5 3,000-gallon power flushers
2 1,800-gallon power flushers
1 1,500-gallon power flushers
1 1,000-gallon alley-type power flusher
1 970-gallon alley-type power flusher
12 light dump trucks
24 white-wing patrol carts

Each beat patrolman is provided with

1946 ANNUAL COST REPORT FOR STREET CLEANING OPERATIONS

Operation	*Total Cost*	*Work Units*	*Unit Cost*
Machine Sweeping	$62,192.24	29.565 miles	2.10 per mile
Machine Slushing	23,316.37	13,529 "	1.72 " "
Beat Patrol	43,146.89	10,149 "	4.25 " "
Broom Gang	44,378.42	11,761 "	3.77 " "
Market Cleaning	3,412.04	258 "	13.22 " "
Alley Flushing	440.51	119 "	3.70 " "
Machine Sweeping—Removal	30,436.98	17,286 c. y.	1.76 " c. y.
Emergency Cleaning	989.86	271 "	3.65 " "
Special Cleaning	1,383.02	326 "	4.24 " "
Special Cleaning (cinders and salt)	16,149.81	6,158 "	2.95 " "
Leaf Removal (hand)	28,526.64	10,307 "	2.77 " "
Leaf Removal (machine)	560.34	258 "	2.17 " "
Hand Sweeping Removal	64,418.47	24,301 "	2.65 " "

a two-wheeled rubber-tired cart for convenience in moving about on his route the various waste cans into which he places the sweepings. The carts and cans are painted yellow and equipped with red flags as a safety measure.

Effective use is made of 300 corner waste receptacles placed at strategic locations, where they receive the small litter which pedestrians have occasion to dispose of.

Organization and Operatiion

The Street Cleaning Section is headed by a supervisor, under whom four general foremen are respectively placed in charge of the Central District (day and night foremen), the Eastern District, and the Western District. The personnel includes fifteen motor equipment operators and a like number of truck drivers, of whom eleven are in charge of the broom gangs, and twenty-one beat patrolmen. The entire organization consists of from 100 to 110 men.

Cincinnati has approximately 752 miles of improved streets and 120 miles of improved alleys, which are regularly cleaned by various methods, as follows:

Type of Operation	*Streets Miles*	*Alleys Miles*
Hand Brooming	467	31
Machine Brooming	637	..
Beat Patroling	34	5
Flushing	120	10

Streets which are swept by the hand-broom method are also occasionally swept by machine brooms on a staggered routine basis, streets serviced by the two methods being 780 miles. Infrequent cleaning is required on approximately 50 miles of macadam streets having no curbs or gutters.

The city is divided into three street-cleaning districts, each of which has widely different characteristics and presents different street-cleaning problems.

The Central District includes the business and shopping center, most of the hotels, a number of theaters and recreational establishments, many manufacturing plants and warehouses, and densely populated multiple-unit residential areas. Vehicular and pedestrian traffic flow is concentrated; many vehicles are street-parked until 10:00 p.m., and soot-fall, as well as fly-ash, add to the cleaning load.

The Eastern District contains approximately 310 miles of streets, 90% of which are in well-populated suburban residential areas and 10% in mixed commercial and industrial areas.

The Western District is nearly as large in area as the two foregoing districts. There are 290 miles of streets—many of which are in sparsely-settled areas—30% industrial, 10% commercial, and 60% residential area. Topographically, 50% hilly, 40% level, the remaining 10% of broken terrain, it has many "no outlet" dead-end streets.

As clean as the public requires, says Cincinnati. This is how it is done in a city where standards are high.

Cincinnati has 35 miles of downtown alleys which require not only daytime hand brooming but also flushing for sanitary purposes. We employ relatively small, short-wheelbase power flushers with the principle nozzles located in front.

Then, too, the beat patrolmen, sometimes referred to as "white-wings," coordinate their efforts with the corner can pick-up services and the sweeping-removal route trucks so that fresh cans are always available to the beat patrolmen, and the removal of the collected litter is accomplished without interference with the general activities of the city.

There are, of course, certain streets in all districts which cannot be adequately or economically cleaned by mechanized methods because of adverse conditions of surface irregularities, narrowness of pavements, heavy grades and "no outlet" streets. These are covered by hand-broom gangs at satisfactory intervals. Although the total number of miles of streets cleaned by the hand-broom method are about one-third of the total miles of machine brooms, the amount of litter gathered per mile by hand methods is a trifle more than four times as great in volume as for the machine brooms. This is very understandable because the frequency of hand cleaning is from three to four times lower than that of the mechanical cleaning.

C. E. Brokaw is the superintendent of highway maintenance under which division street cleaning is accomplished. R. G.Sarvis is the director of public works and W. R. Kellogg the city manager of Cincinnati.

CINCINNATI STREET OPERATIONS

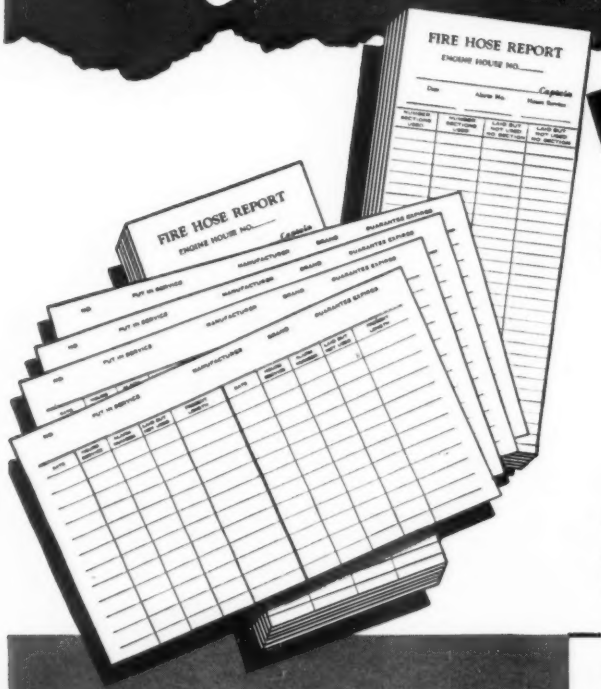
	CENTRAL DIST.		EASTERN DIST.		WESTERN DIST.	
		Cleaning		Cleaning		Cleaning
	Miles	Freq.	Miles	Freq.	Miles	Freq.
Hand Broom Streets.....	68	Weekly	15-20	Weekly	15-20	Weekly
Hand Broom Alleys	31	Weekly				
Beat Patrol Streets.....	22	Daily	22	6 days week	12	6 days week
Beat Patrol Alleys.....	5	Daily				
Machine Broom Streets..	105	6 days week	150	2 weeks	50	Weekly
Flushing Streets	90	Nightly	358	2 weeks	340	2 weeks
Flushing Alleys	9	Nightly				
Market Cleaning	0.8	Daily*				

*2.5 miles cleaned following Saturday and holiday markets.

All-around convenience characterizes this white-wing cart.

Free!

FOR ALL FIRE CHIEFS



FIRE HOSE REPORTS

FIRE HOSE RECORDS

Many leading fire departments have found these forms useful and valuable for these reasons:

They give the Chief an exact comparative record of performance of different brands of hose.

They prove by actual record which brand is best.

They show up cheap hose and why it is too expensive to use.

They show how long some sections of hose are allowed to remain at bottom of apparatus.

They give the Chief a factual, actual record on which to base his recommendations of preferred brands.

You will find these forms invaluable in your department. We again are offering them to all Fire Chiefs as a free service. There is no charge or obligation. Mail the coupon for your supply.

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Without charge or obligation send me the following:

_____ Pads of 50 Fire Hose Reports

_____ Fire Hose Records (5" x 8½" cards)

Name_____

Department_____

Address_____ B

Zoning and Planning Notes

Edited by NORMAN WILLIAMS, JR.
With the assistance of Frank B. Williams and Edward M. Bassett

Pennsylvania Redevelopment Law Upheld

PENNSYLVANIA. *Belovsky v. Redevelopment Authority of City of Philadelphia*, 54 Atlantic (2d) 277 (Pennsylvania Supreme Court, July 29, 1947).

In this case the Pennsylvania legislation for rehabilitation of urban blighted areas was upheld on constitutional grounds. The lower court opinion in the same case was discussed in THE AMERICAN CITY for April 1947.

Since the elimination of blighted areas is similar to slum clearance, the Pennsylvania Supreme Court followed the lower Court in leaning heavily on the opinion in *Dornan v. Philadelphia Housing Authority*, 331 Pennsylvania 209. In an excellent discussion, the expanding concept of "public purpose" was traced directly to the need to use the power of eminent domain for new social goals:

> In the case of the Urban Redevelopment Law the operation of clearing and rehabilitating the 'slums', now called 'blighted areas', is not to be followed by a continuing ownership of properties by the Redevelopment Authorities for any such further and ulterior social-welfare purpose as that of providing low-rental homes for persons in moderate circumstances. In this additional feature of the Housing Authorities Law there was implicit the modern recognition of an enlarged social function of government which called for an advance over previous legal conceptions of what constitutes a public use justifying the exercise of the power of eminent domain, but this court sustained the constitutionality of that act, and the courts of numerous other states have, without exception, upheld similar legislation. In the case of the Urban Redevelopment Law, therefore, the justification of the grant of the power of eminent domain is even clearer than in the case of the Housing Authorities Law, there being in the present act only the one major purpose of the elimination and rehabilitation of the blighted sections of our municipalities, and that purpose certainly falls within any conception of 'public use' for nothing can be more beneficial to the community as a whole than the clearance and reconstruction of those sub-standard areas which are characterized by the evils described in the Urban Redevelopment Law. It has long been clear that those evils cannot be eradicated merely by such measures, however admirable in themselves as tenement-house laws, zoning laws and building codes and regulations; these deal only with future construction, not with presently existing conditions. Nor, as experience has shown, is private enterprise adequate for the purpose. The legislature has therefore concluded—and the wisdom of its conclusion is for it alone—that public aid must accompany private initiative if the desired results are to be obtained. The great cities of Europe have been improved and largely rebuilt through the expenditure of public moneys by the edicts of monarchs and dictators; if the governing bodies in our own democratic Commonwealth are to be held unable, under our constitution, to plan and support such reconstruction projects, our cities must continue to be marred by areas which are focal centers of disease, constitute pernicious environments for the young, and, while contributing little to the tax income of the municipality, consume an excessive proportion of its revenues because of the extra services required for police, fire and other forms of protection.'

As usual in constitutional cases involving redevelopment laws, the real question concerned the resale of land to private persons after redevelopment; and that practice was upheld here on two grounds. First, since the program is limited to rehabilitation, the public purpose has been accomplished when reconstruction is completed. Second, continued public ownership of land had already been upheld in connection with the public housing program, and a program involving resale is obviously a less drastic use of governmental powers. Moreover, as the Court pointed out, the expenditures of public money to purchase land from one person and resell it to others has itself already been approved in certain cases, as in schemes for subdividing of homesteads and farms.

In disposing briefly of a variety of other constitutional objections, the Court observed that as usual a large number of such points had been raised, "possibly in the hope that a stray shot may find its way to some vital target."

Factory Parking Lots

CONNECTICUT. *Abbadessa v. Board of Zoning Appeals of City of New Haven*, 54 Atlantic (2d) 675 (Connecticut Supreme Court of Errors, July 9, 1947).

A company owning a factory on the north side of Derby Avenue in New Haven bought land, situated across the Avenue and with an exit on the Avenue, for use as a parking lot for its employes. Subsequently the company bought another lot—adjoining the first but with an exit on a side street—which had been used for storage and for the offices of a contracting business, both before zoning and later as a nonconforming use in a residence district. The plan was to combine these two lots into a larger parking lot, using both exits. The Board of Zoning Appeals ordered the company to close the driveway opening on the side street, in order to cut the traffic hazard, under the theory that development of the lots was an extension of an existing industrial establishment, for which the Board could order safeguards. On appeal, the Court held that a creation of a larger parking lot across the Avenue was not an extension of the industrial plant, particularly since it was in a different zone. The development was held to be a mere continuation of existing nonconforming uses, and therefore to carry with it all the incidents of the former use, including the driveways. It was therefore held that the Board had no power to impose limitations on the number of driveways.

Filling Station Signs

NEW JERSEY. *Ackerman Fuel Oil Co. v. Board of Adjustment of Borough of Paramus*, 54 Atlantic (2d) 661 (New Jersey Supreme Court, September 5, 1947).

A filling station sign indicating the kind of gasoline sold existed before zoning and continued thereafter as a non-conforming use. The sign itself was taken down, in some manner not specified, just before a transfer of ownership of the filling station, and permission was refused to the new owner to restore the sign. Under the New Jersey enabling act for zoning, a non-conforming use if partially destroyed may be restored or repaired; but judicial interpretation has established that the use in such a case must be the same before destruction and after restoration. The Court held that the circumstances of this case involved no change of the use, and that therefore the new owners were entitled to replace the sign.

Restriction of Airports—Zoning

NEW JERSEY. *Yoemans v. Hillsborough Township*, 54 Atlantic (2d) 202 (New Jersey Supreme Court, July 7, 1947).

After a contract was made to purchase land for an airport, a zoning ordinance was passed forbidding airports in the residential-agricultural zone and placing the tract covered by the contract in such a zone. When the ordinance was challenged, the Court held that no evidence had been presented to show that the ordinance was unreasonable and unconstitutional.

Restriction of Airports—Nuisance

NEW JERSEY. *Oechsle v. Ruhl*, 54 Atlantic (2d) 462 (New Jersey Court of Chancery, August 12, 1947).

This case involved an attempt to enjoin work on an airport while the runways and hangars were in the process of construction. The Court held as usual that an airport could not be considered a nuisance per se, and allowed construction to continue—on the understanding that use of the completed airport might be forbidden in the future, if operations there became too annoying. However, the Court did state that a diminution in the value of the adjoining property was not to be considered a factor that would lead to judicial intervention and prohibition of airport construction.

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Superintendent ...of Safety

FAITHFUL guardian—friendly guide—that's one of the best descriptions of a Union Metal tapered *steel* lighting standard equipped with a modern luminaire.

Thousands of them are on duty night after night, serving in hundreds of cities and towns everywhere. They've been doing that faithfully ever since the beginnings of modern street lighting in this country.

Since that time—over 40 years ago—Union Metal has pioneered in designing and engineering improvements in the steel standards that support street lights. It's a job in which we take *extra* satisfaction, because these lighting standards have helped bring many benefits to people everywhere. They help protect lives . . . they safeguard property . . . they aid traffic.

Plan now to include Union Metal's *steel* lighting standards in your community's street lighting improvements. They're *economical* investments that pay *constant* dividends in community safety. The Union Metal Manufacturing Co., Canton 5, Ohio.

We regret the present extended deliveries due to the steel shortage, but the situation is improving and you will find Union Metal lighting standards well worth waiting for.

UNION METAL

Largest Producers of Street Lighting Standards

Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Breach of Peace—Freedom of Speech—Inflammatory Remarks

In prosecution against speaker for making or aiding in improper noise, riot, disturbance, breach of peace, or diversion tending to breach of peace in violation of city ordinance, held speech not protected by constitutional guarantee of freedom of speech, where speaker was public agitator who intentionally stirred up class prejudice, religious hatred, and anti-Semitism.

City of Chicago v. *Terminiello*, 74 N.E. (2d) 45 (Ill. App., June 25, 1947).

Buildings—Moving Out of Town—Ordinance Requiring Cash Payment—Validity

Town ordinance providing if building was to be moved outside corporate limits, owner required to make cash payment of $500 to town, held that such ordinance was a prohibition, rather than regulation, and void as unjust, unreasonable, discriminative, and oppressive.

Town of Eckley v. *Meyers*, 181 Pac. (2d) 1014 (Colo., June 16, 1947).

City Employes—Discharge—Hearing Required

In action for declaratory judgment, held that under city charter, discharged city employe must be given hearing before Board of Civil Service Commissioners within reasonable time after demand, since charter does not fix time within which such hearing must be afforded.

Steen v. *City of Los Angeles*, 182 Pac. (2d) 602 (Cal. App., July 9, 1947). *Reh. den.* July 25, 1947.

Contracts—Sewer Connections—Necessity for Ordinance

In action for specific performance to require City of New Castle to issue permit for connection with city sewer system, held formal resolution of city council accepting proposal to connect certain lots with city sewer system sufficient for purpose of making binding contract and no ordinance required to evidence adoption.

Gilfillan v. *Haven*, 53 Atl. (2d) 901 (Pa. Super. Ct., July 17, 1947).

Income Tax—Authority of Municipality to Impose

In action for declaratory judgment, held "earnings tax" on salaries, wages, commissions, and net profits of residents and non-residents for general revenue purposes, not within city's power to enact notwithstanding charter provision authorizing taxes for general and special purposes "on all subjects or objects of taxation."

Carter Carburetor Corp. v. *City of St. Louis*, 203 S.W. (2d) 438 (Mo., June 9, 1947). *Reh. den.* July 5, 1947.

Intoxicating Liquor—License—Authority to Refuse

In mandamus, held that ordinance of City of Jacksonville authorizing municipal inspector to refuse issuance or transfer of licenses for sale of beer and wine upon finding that issuance or renewal is contrary to welfare of community is not invalid as granting arbitrary power, and denying due process of law, in view of grant of right of review.

Permenter v. *Younan*, 31 So. (2d) 387 (Fla., July 1, 1947). *Reh. den.* July 29, 1947.

License Taxes—Contract Motor Carriers

Where contract motor carrier entered city merely to deliver goods and did not there maintain business terminal or station facilities for transportation of property or receive freight for transportation to other parts of state, held not subject to city license tax.

Decatur Transit v. *City of Gadsden*, 31 So. (2d) 339 (Ala., June 26, 1947).

Milk—Ordinance Requiring Pasteurization Within City—Validity

In mandamus held that city ordinance prohibiting sale in city of pasteurized milk which had not been pasteurized in approved plants "within 6 miles from intersection of State Street and E. Grand Ave." in the city is valid as reasonable exercise of "police power" of city. *Dyer* v. *City Council of City of Beloit*, 27 N. W. (2d) 733 (Wis., June 10, 1947).

Nuisances—Junkyards

In prosecution under ordinance prohibiting junk yard within borough limits, where validity or reasonableness of ordinance not questioned, held only proof necessary was existence of junk yard notwithstanding ordinance declared maintenance of junk yard within borough limits to be public nuisance.

Borough of Lewisburg v. *Baker*, 53 Atl. (2d) 829 (Pa., July 17, 1947).

Ordinances—Validity Not Involved—Right of City to Appeal

Where pleadings in circuit court did not involve validity of city ordinance, but merely brought in issue sufficiency of complaint and warrant which were basis of conviction in recorder's court, held no right of appeal inured to city from judgment granting motion to strike or quash complaint.

City of Gadsden v. *Haynie*, 30 So. (2d) 908 (Ala. App., June 10, 1947).

Policemen—Cause for Discharge—Membership in Fraternal Order Of Police

Under statute prohibiting discharge of policemen or police officers without cause, held not limited to misconduct or inadequacy and city manager's discharge of policeman for membership in fraternal order of police not denial of constitutional rights of assembly and petition and equal protection of laws. *Goodwin* v. *Oklahoma City*, 182 Pac. (2d) 762 (Okla., June 24, 1947).

Sales Tax—Absorption by Seller

In proceeding to review determination assessing sales tax on sales of coal to petitioner, held under New York City sales tax, seller is prohibited from absorbing tax and comptroller entitled to enforce law against buyers who fail to pay tax, notwithstanding payment by seller.

Fifth Ave. Bldg. Co. v. *Joseph*, 71 N. Y. S. (2d) 566 (N. Y. App. Div., June 30, 1947).

Sewer Rentals—Charge Based on Water Use—Validity

In action to enjoin collection of sewer charges, held City of Muskogee may fix, as basis for computing charge, volume of water delivered to use through water meter and such ordinance does not deprive user of property without due process of law.

Sharp v. *Hall*, 181 Pac. (2d) 972 (Okla., June 17, 1947).

Sidewalks—Injury on—Notice of Defect

In action for damages arising from fall on defective sidewalk, held that defendant city could not escape liability for injury sustained by pedestrian on ground it was tricked into believing case was solely snow and ice case, where city had notice of hole adjacent to walk which played decisive role in accident.

Claessens v. *City of Troy*, 71 N. Y. S. (2d) 571 (N. Y. App. Div., July 1, 1947).

Slot Machines—Money in—Subject to Seizure

In detinue action, held that money found in slot machines legally seized by city formed integral part of illegal gambling operation and never became property of owner of machines but was subject to seizure and confiscation along with machines.

Germania Club v. *City of Chicago*, 74 N. E. (2d) 29 (Ill. App., June 26, 1947).

Streets—Widening—Abuse of Discretion

In action for injunction, held action of city commissioners of Tallahassee in widening street and removing trees therefrom was abuse of discretion where record failed to disclose any element of public welfare, public necessity or even public convenience, to be served thereby. *Bowen* v. *Winterle*, 30 So. (2d) 536 (Fla., May 20, 1947). *Reh. den.* June 13, 1947.

Street Trades—Detroit Ordinance Upheld—Distribution of Religious Literature

In conviction for violation of City of Detroit street trades ordinance, held that such ordinance was valid as applied to children engaged in distribution of literature advertising religious meeting and did not deny equal protection of the laws. *People* v. *Ciocarlan*, 26 N. W. (2d) 904 (Mich., Apr. 8, 1947).

Top Soil—Validity of Ordinance Regulating Removal—Impairment of Contracts

Where town ordinance prohibited removal of top soil and contractors could proceed with their operations only at loss if they complied with ordinance, held that such ordinance was valid as police power measure and did not impair obligations of contract. *Lizza & Sons* v. *Town of Hempstead*, 69 N. Y. S. (2d) 296 (N. Y. Sup. Ct., Nassau Co., Nov. 22, 1946).

Taxicabs—Permit—Mandamus to Require Issuance

Where city council of City of Athens refused to issue a permit to operate taxicabs though applicant had complied with all requirements of ordinance for issuance of such permit, held that court did not err in granting mandamus absolute requiring issuance of permit.

McWhorter v. *Settle*, 43 S. E. (2d) 247 (Ga., May 16, 1947). *Reh. den.* June 12, 1947.

Veterans—Civil Service—Right to Examination for Promotion

In proceeding to compel Civil Service Board of City of Oakland to re-establish cancelled Civil Service eligibility list, held city civil service employes upon return from military service entitled to take examinations to make them eligible for promotions they would have received had they not left public service and had passed required examination.

Cunningham v. *Hart*, 183 Pac. (2d) 75 (Cal. App., July 21, 1947).

Workmen's Compensation—Death Action by Administrator

On appeal from award of Workmen's Compensation Board, where decedent left no dependents entitled to workmen's compensation and no claim made for funeral expenses, held decision of Board that decedent's injuries and subsequent death arose out of and in course of employment was not bar to death action by administrator against employer.

Dept. of Taxation and Finance v. *City of New York*, 71 N. Y. S. (2d) 572 (N. Y. Sup. Ct., App. Div., July 1, 1947).

WHEN AMBULANCES CAN'T GET THROUGH...

Ease serious congestion — encourage public transit

A recent magazine article states that, in one large midwestern city, a person injured downtown could get to the nearest hospital faster in a wheelbarrow than in an ambulance. A little far fetched perhaps, but certainly traffic congestion is wreaking havoc in every sizable city. It's costing New York a million dollars a day in loss of time and money. In Baltimore it's $14,000,000 a year and in Boston, $25,000,000 a year.

If you're fed up with bottlenecks, automobile accidents, blighted areas, and costly street widening, here's a quick and permanent way to cut traffic congestion. Help your public-transit officials provide good service and urge them to tell your citizens about the benefits of using public transit.

Public Transit Uses Street Space Most Efficiently

Because swift public carriers accommodate an average of 50 persons per vehicle, a transit rider needs only 70 square feet of street space. Based on the automobile's average carrying capacity of 1.75 persons, an automobile rider requires 500 square feet. Thus, every time a driver leaves his car at home and rides by transit, 430 square feet of street space is released to speed all traffic.

Public Transit Needs No Parking Space

The parking space required by a transit rider is zero. On the other hand, an automobile passenger needs 140 square feet—almost as much space for parking as he needs for working.

For all those reasons, why not make a date right now with your G-E transportation specialist and local transit officials to develop increased transit riding. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC 101-202

Have you seen *Lifestream of the City*, the movie that shows how to reduce traffic congestion? Ask your G-E representative to arrange for a showing.

Rochester's Metered Parking Lots Pay

By WILLIAM MICHAEL
Assistant Traffic Engineer
Rochester, N. Y.

OUR FOUR municipally owned metered parking lots in downtown Rochester have proved successful both financially and as a means of easing the pressure for parking space. With four lots in operation, our parkers have a wide choice of parking spaces and can now park where the time limit fits their needs. Theater-goers and people with doctors' or dentists' appointments can use either lot number 1 or number 4, which offer parking for 2 to 10 hours at 5 cents per 2 hours. Those on short errands go to lot number 2 or number 3, which have hourly parking.

Lot number 1 on South Avenue has parking capacity for 43 cars. Parking time ranges from 2 to 10 hours, the price 5 cents and 25 cents, respectively. On Clinton Avenue North, lot number 2 will park 40 cars at 5 cents per hour. Our largest lot, the 62-car lot at Temple and Chestnut, is also a 5-cent-per-hour lot. Lot number 4 on Plymouth Avenue was planned to accommodate 50 cars, but, because of a building on the lot which is still in use, we have constructed only 38 stalls at 5 cents for 2 hours and 25 cents for 10 hours.

The land for these lots was obtained through tax foreclosures, and the money for construction was taken from the parking-meter fund. The lots were graded, then surfaced with gravel, and rolled. The parking spaces and areas were marked out by heavy timbers. The last step was the installation of parking meters. All work was performed by city forces.

The four lots are serviced by meter men in our department, who repair

Below: Number 4 of Rochester's four municipal parking lots. When completed, this lot will accommodate 40 carts.

Top, right: Park-O-Meters (Magee-Hale) in operation at newly completed lot number 3.

Below, right: Building parking spaces and installing Miller (Duncan) meters on lot number 2.

Take it down?

NO!

Reflectorize it in place with PRISMO!

Don't Take That Sign Away for a Single Day . . . or Even a Single Second

NOW you can work on it . . . at it . . . right in the field! Reflectorizing in place is always possible with the revolutionary new PRISMO VERTICAL APPLICATION METHOD.

VAST NUMBER OF USES . . . HERE ARE A FEW

All kinds of signs
Safety islands
Underpasses
Trailer truck stripes
Phone numbers on taxicabs
Concrete abutments
Guard rails
Railroad car markings
Barricades
Trolley markings

Send for Bulletin No. 547

from your Prismo distributor. Get full information on astonishing low cost and how you can apply Prismo method to ANY SURFACE, ROUGH OR SMOOTH . . . WOOD, STEEL OR CONCRETE.

Amazingly Easy!

Take air from striping machine. Spray binder and then spray Prismo spheres on the sign . . . or if you have no air supply, simply brush Prismo binder and spray the Prismo spheres with this hand model vertical sphere gun. Simple enough?

Amazingly Durable!

Here is the complete sign completely *reflectorized.* 24 hour a day visibility for *years* — has been achieved in a few *minutes.*

Widest Angularity of Vision

Any way you look at it, Prismo is best. Sign is now continuously visible—day and night—from *any* angle.

PRISMO SAFETY CORPORATION

HUNTINGDON, PENNA.

meters and make collections. There is no need for a steady attendant on any of the lots, because the police check each lot during the day and at night for violators.

Although all four lots have been in operation a short time, each is proving itself to be financially successful. Lot number 1, costing $3,724, brought in a revenue of $541 from May to September. The lot on Clinton Avenue cost $4,070 and has paid $580 from May 27 through September 24. Our largest lot at Chestnut and Temple in 3 months has paid off 21% of its total cost of $6,076. The total cost of the lot on Plymouth Avenue has not yet been estimated, because construction has not been completed. The revenue from this lot in its one month of operation has been $255, which is a good indication of what the yearly revenue will be. Costs and current income are summarized below:

	Construction			Cost Per Car	App. Daily Rev.
	Material	Labor	Total		
No. 1 43 cars	$3,185	$539	$3,724	$ 87	$ 4.75
No. 2 40 cars	3,457	613	4,070	102	4.84
No. 3 62 cars	5,398	678	6,076	109	15.50
No. 4		(Not completed)			

More Cars Wanted in Fort Wayne's Business District

By JAMES T. WHITE
Traffic Engineer
Fort Wayne, Ind.

FORT WAYNE will build an expressway, not to by-pass motor traffic around or away from the central district, but to deliver it there at any street desired. This plan, approved by the City Administration and the Federal Roads Administration, was worked out on the basis of origin and destination facts collected by a survey.

The first fact was traffic congestion and its price: in 1946 there were 12 fatalities, 962 injuries, 5,734 damaged vehicles in 3,099 accidents. Downtown traffic moves at about five miles an hour. This inconvenience to the public is as good as asking for decentralization, blighted areas, and tax chaos.

If those fatalities and injuries had happened in a single hotel fire, the entire city would be stirred. If the amount of the economic losses, estimated at $755,425, instead of being spread over all those car owners, were assumed by the government of the people and spent constructively, there would be fewer deaths, less suffering, and less monetary waste. To spend such money constructively requires more facts.

Whence come these automobiles that pile up in Fort Wayne every day? What are their destinations? Seventy-four percent of all traffic begins and ends within the city; 24% of the remainder is bound for points within the city. Only 2%, which begins and ends outside the city, is through traffic. In other words, very little of the traffic wishes to avoid the city. The solution, or at least a need, therefore, is an expressway feeding the city streets. Instead of attempting to drain traffic away from the marts of commerce, this route will encourage the entry of more customers. Is this madness? If it were let go at that, it would be. If it is clearly recognized that facilitating the flow of traffic to the business and pleasure houses must be matched by successful measures to relieve congestion within the district, it is traffic engineering. The city will have to spend several millions for the expressway. At least comparable funds will have to be spent for improving flow and providing parking in the magnet of the central district. Elsewhere in the city, traffic congestion will be reduced because motorists will use the new expressway in preference to a crowded street system. This new problem calls for terminal facilities, parking lots, a traffic-sign project, a new traffic-signal system controlling access points and traffic-safety lighting.

East-west aerial view of the proposed expressway route.

Condensation of a paper presented at the 33rd Annual Purdue Road School.

Growth of City-Owned Transit Systems

AMONG the 14 cities in the United States with a population over 500,000, seven cities now own or are about to own their transit systems. These are Boston, Chicago, Cleveland, Detroit, Philadelphia, New York, and San Francisco. Philadelphia's streetcar lines are leased to private operators. Detroit, New York, Cleveland, and San Francisco have city-owned bus lines.

Purchase of Chicago streetcar and elevated lines by the newly created Chicago Transit Authority marks the largest transaction of its kind in recent years. A $105 million bond sale will be used to put the lines under public ownership and start a thorough modernization program. Modernization is expected to take 10 years and will cost approximately $150,000,000.

Transit improvement in Boston is being undertaken by the Metropolitan Transit Authority, created by the 1947 Massachusetts legislature. A $23-million bond issue is permitting complete transfer of Boston transit lines from private to public ownership. The new authority was created to provide unified transit service for Boston and 13 surrounding municipalities.

Here's *the answer* to your off-street parking problem

PARK-N-LOT*

THIS NEW 10-HOUR MODEL OF PARK-O-METER WILL FINANCE MUNICIPAL PARKING LOTS AND SOLVE EVERY OFF-STREET PARKING PROBLEM

Cities Recently Modernized Include:

ROCHESTER, NEW YORK — MANCHESTER, N. H.
ST. JOSEPH, MICHIGAN — COOS BAY, OREGON
TYLER, TEXAS

From coast to coast cities of all sizes are installing automatic Park-N-Lot* meters . . . the offstreet twin of the famous PARK-O-METER!

Fully variable to meet every coin and time combination that may be required. Write for details now.

TYPICAL OPERATING PLAN

FRINGE AREA	BUSY AREA
2 hours, 1 nickel	1 hour, 1 nickel
4 hours, 2 nickels	2 hours, 2 nickels
6 hours, 3 nickels	3 hours, 3 nickels
8 hours, 4 nickels	So on through 10 hours
10 hours, 5 nickels	5 hours, 1 quarter
10 hours, 1 quarter	10 hours, 2 quarters

* REGISTERED TRADE MARK U.S. PAT. OFF.

Magee-Hale PARK-O-METER COMPANY

COMMERCE EXCHANGE BUILDING • OKLAHOMA CITY 2, OKLAHOMA

(Macnick Company, Manufacturers, Tulsa, Oklahoma)

Two-Hour or One-Hour Meters?

WHY is it that some cities prefer a two-hour parking meter, while the choice of others is a one-hour and sometimes a four-hour meter? Data concerning this were compiled recently by the New York State Bureau of Municipal information.

Five municipalities reported the use of two-hour meters. These were Albion, Hornell, Endicott, Ithaca, and Troy. When asked what were the merits of two-hour metered parking, each town had a different reason. Albion and Hornell both reported that their rural and city residents were pleased with two-hour parking, because this extended time limit gave them ample time to shop. Neither of these towns has ever used one-hour meters. Ithaca, N. Y., isn't showing any favoritism. In 1941, Ithaca purchased 360 Dual Automatic parking meters, of which 316 were of the penny-nickel model and 44 of the nickel two-hour type. The penny-nickel type was installed in the business section, where there was the greatest need for turnover in parked cars. The straight nickel two-hour model was installed on adjacent streets off the main business district for the convenience of those parkers who have doctors' and dentists' appointments or other business for which a longer parking period is necessary. Ithaca reports that both types of meters have been very satisfactory. Troy says that two-hour meters have been successful in that city, because a person on a two-hour business errand avoids having a ticket placed on his auto. Endicott, N. Y., is strongly considering changing some of its remaining one-hour meters in the business section to two-hour meters. As in Ithaca, its present two-hour meters were installed for parkers with lengthy appointments.

Then, there are those cities like Dunkirk, who have one-hour parking meters, because they feel that with two-hour parking meters in congested areas there is not a fast enough turnover to allow for more frequent use of these parking spaces. Peekskill, who has been using parking meters since 1939, reports satisfaction with its 417 one-hour parking meters. Penn Yan has had no difficulty with its one-hour meters.

Yonkers had the theater-goers in mind when it installed 131 four-hour parking meters adjacent to the motion picture theaters. Because this area is not a busy shopping section, valuable parking space is not sacrificed.

Albion, Endicott, Hornell, Dunkirk, Peekskill, and Penn Yan use the manual-type meter. The automatic-type meter is used by Ithaca, Troy, and Yonkers.

ACME NEWS PICTURES

Officer A. L Miner wonders if *double parking* at one of Miami's Mark-Time meters is illegal.

Municipal Parking Facilities

NEWLY enacted legislation relating to municipal establishment and operation of off-street parking facilities has been reported from California, Illinois, and Wisconsin.

The new California law authorizes any city or political subdivision of the state to permit the parking of vehicles on real property to which it has title, easement, or possession; to lease or grant franchises in real property for parking purposes, and to consult and maintain buildings for such purposes.

In Illinois, where previous enabling legislation applied only to cities of over 150,000 population, the new law authorizes all cities to establish off-street parking places and to borrow money therefor.

The new Wisconsin law authorizes the city of Milwaukee and all villages of that state (all of which were excluded from the provisions of a similar law passed in 1943) to operate parking facilities and to issue mortgage bonds for their acquisition or construction.

From the July issue of *American Municipal News*.

For Cars, Not Horses

In Mitchell, S. D., the City Council ruled that the new city parking meters must not be used as hitching posts.

Ottawa's Staggered Hours Relieve Congestion

IN OTTAWA, Canada, thousands of government employes are once more working under a staggered-hour program. Under a normal schedule the Ottawa Electric Railway Co. would be unable to handle efficiently the peak rush-hour traffic. With the new system, government employes will start work at 8:30, 8:45, 9:00, 9:15, and 9:30 a.m., and will finish, respectively, at 4:30, 4:45, 5:00, 5:15, and 5:30 p.m.

It is hoped that in time the first and last shifts can be eliminated, so that the opening and closing times of the various offices will be spread over only one hour, instead of one and one-half hours.

Winter Months Call For Caution

NIGHT accidents were responsible for almost two-thirds of all traffic deaths in cities last year, according to the National Safety Council report. Even in rural areas, well over half of all traffic deaths happened at night.

Because the hazard of darkness increases greatly in fall and winter months, as the days grow shorter, special emphasis must be given to the problem at this time of the year. The influence of early darkness is especially apparent in the pedestrian death figures, according to the Council. In analyzing pedestrian deaths during 6 to 7 p. m., the Council found that four times as many pedestrians are killed during that hour each month in November, December, and January as the average for the other months of the year. The Council concludes that, since there is no evidence of greater disregard for traffic regulations by either motorists or pedestrians during these three months, both have failed to modify their traffic habits to compensate for low visibility after dark.

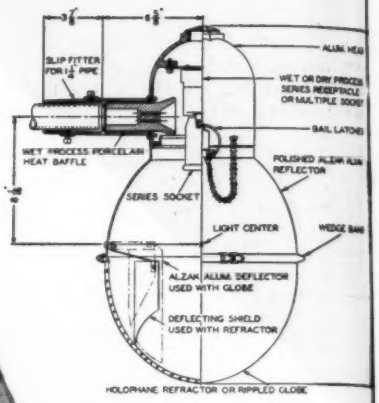
Night-Walking Tips

The Council offers these tips for night walking:

1. Don't take it for granted that the motorist sees you.
2. Wear light-colored clothing or carry something white when walking in a roadway, and walk on the left side facing traffic.
3. Obey all regulations and signals. Do not step unexpectedly from between parked cars or around a bus or streetcar.
4. Don't obscure your vision with umbrella, packages, or newspaper.

JOSLYN

TYPE 95 LUMINAIRE


SLIP FITTER FOR 1¼" PIPE
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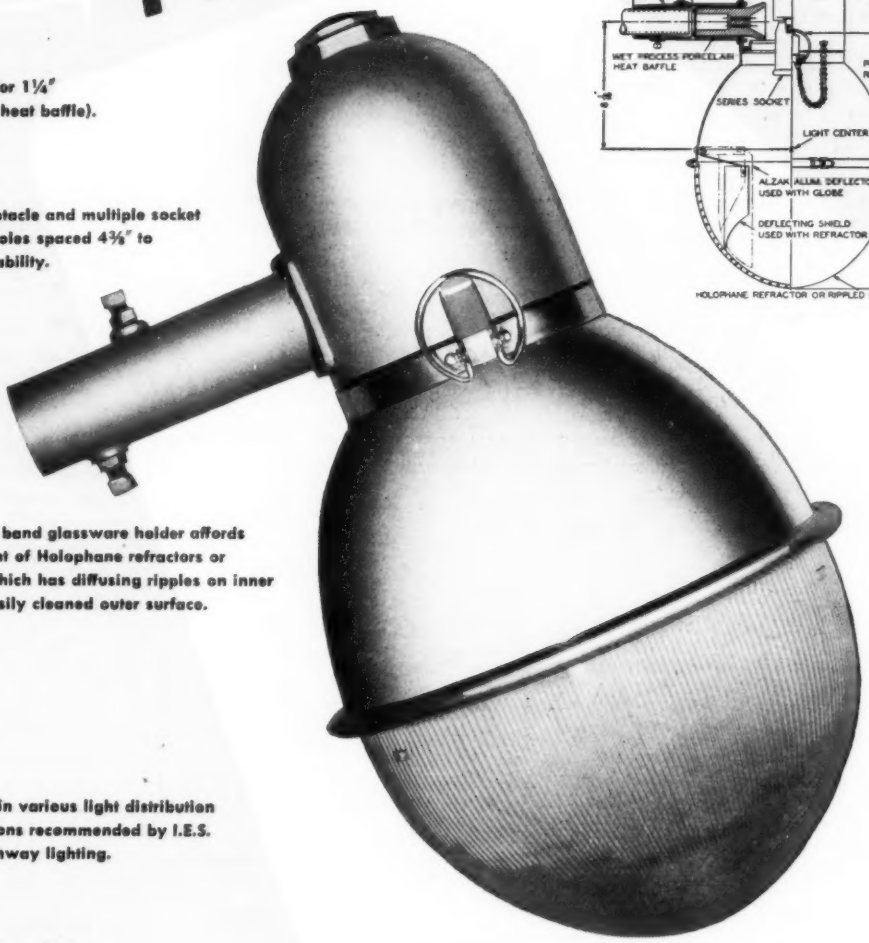
WET OR DRY PROCESS SERIES RECEPTACLE OR MULTIPLE SOCKET
BAIL LATCH
WET PROCESS PORCELAIN HEAT BAFFLE
POLISHED ALZAK ALUM. REFLECTOR
SERIES SOCKET
LIGHT CENTER
WEDGE BAND
ALZAK ALUM. DEFLECTOR USED WITH GLOBE
DEFLECTING SHIELD USED WITH REFRACTOR
HOLOPHANE REFRACTOR OR RIPPLED GLOBE



1. **Adjustable slip fitter for 1¼" pipe (with or without heat baffle).**

2. **Series receptacle and multiple socket mounting holes spaced 4⅜" to allow interchangeability.**

3. **Bail latching of reflector to head providing interchangeability with respect to reflectors and reflector-glassware units of various types.**

4. **Aluminum wedge band glassware holder affords positive attachment of Holophane refractors or the new pressed globe which has diffusing ripples on inner surface and smooth easily cleaned outer surface.**

5. **Gasket free coupling of reflector to head and reflector to glassware.**

6. **Available in various light distribution classifications recommended by I.E.S. for street and highway lighting.**

7. **Can be equipped with porcelain entrance bushings, external terminals or gland type bushings with rubber packing gland.**

THE TYPE 95 LUMINAIRES are also available with the new, unique, gasketless latching which permits relamping from the ground. *Write for further information.*

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Lighting New Traffic Highways

By HUGO H. WINTER
Street and Parkway Design Engineer
City of Los Angeles

MANY millions of dollars have been expended by California cities, counties, and, in recent years, by the state in developing city streets and surface arteries. This expenditure has given increased traffic capacity and has resulted in a satisfactory network of streets in most of the urban areas, but it has not solved the real traffic problem—that of moving large masses of traffic speedily, safely, and comfortably over the relatively large distances to be found in most urban areas in this state.

And so it has become recognized that the outstanding need in the urban areas and on the major trunklines connecting these areas is the construction of a system of freeways, parkways, or expressways to supply the traffic elements now so signally missing in the present street and highway system.

For the first time in the history of highway construction, we can now say that in building the parkways or expressways we are building highways which are to be permanent. The inherent features built into the expressways assure this fact. Absence of property frontage and its attendant interference with the flow of traffic; fixed grade separation structures which cannot readily be altered; tremendous expense of acquisition and construction, and the design and construction for safe speeds of 60 miles per hour all contribute to the unalterability of the expressways.

The expressways to be built under this program will be planned and constructed to the highest known standards of design, construction *and traffic safety*. They will be constructed with minimum rates and changes of grade; long radius curvature where curves are necessary; ample horizontal and vertical sight distances; wide and well-marked lanes of travel; safe continuous shoulders along the edges of the expressway roadways, separated from the main roadways by mountable curbs to discourage their use as additional lanes; wide center dividing islands to reduce the feeling of approaching traffic and planted to eliminate headlight glare; superelevation to increase comfort of driving the curves; adequate drainage to permit safe all-year driving, even in rainy weather. Acceleration and deceleration lanes will be provided to make possible proper transition from surface artery speeds to expressway speeds and vice versa. Uniformity of design features will reduce the element of uncertainty or surprise in traveling the parkway. Properly worded signs effectively placed will also help the smoothness of traffic flow. In summary, all of these elements will make for the most effective, highest-capacity, highest over-all safe-speed, highest-safety roadways which have ever been constructed. At least this will be true during the daylight hours. But—

What About the Night?

It is a well-authenticated fact that well-lighted streets are much safer to travel than those which are not provided with fixed, continuous illumination. Many of the hazards existent on surface arteries will be eliminated by design and construction on the expressways. There will still be present the dangers of broken-down or stalled cars which have not had time or opportunity to get out of the high speed roadways; unforeseen movements of traffic ahead, vehicles straying into the path of approaching traffic from the opposite direction in spite of division of opposing lanes, and almost continuous change of alinement, many overpasses and underpasses, access roads, and varying road widths which complicate the night driving.

Designed and engineered for the utmost in safety for daytime traffic, expressways should incorporate adequate measures to provide the maximum possible safety for night traffic. In the city of Los Angeles, we are convinced that an *adequate lighting system along the expressways, providing the intensities of roadway illumination recommended by the Illuminating Engineering Society, is just as essential and integral a safety factor to be built into the expressway as are adequate sight distance, long radius curvature, wide lanes and roadway superelevation.*

In connection with the lighting of expressways, the present announced policy of the State Highway Division and its application does not in our opinion measure up to the needs of the situation. It is clear that the state does not now intend to provide funds for adequate lighting systems as an integral part of the first construction of expressways in the urban areas, nor is it convinced of the need of continuous fixed illumination.

Heavy Traffic Demands Adequate Lighting

Twenty-four-hour counts taken on normal week days in February 1947 along the Arroyo Seco Parkway and the Hollywood Parkway through Cahuenga Pass recorded 86,197 and 87,285 cars, respectively, using these parkways. Night rates of traffic between sunset and midnight were found to be almost identical on these parkways and varied from 8,500 to 2,700 cars per hour. Authoritative traffic manuals say that when the hourly traffic density is 1,200 cars or more, fixed illumination should be used.

The Arroyo Seco Parkway is a complete freeway with no property access and with divided roadways and all crossings grade-separated. It lies partially in three cities. The city of Los Angeles constructed a lighting system along 4.39 miles of the 5.75 miles within its boundaries, and the city of Pasadena lighted the 0.34 mile within that city. There are no lights along the 1½-mile section within the city of South Pasadena except sodium vapor luminaires at points of hazard and soffit lights under the several overpasses. The fixed luminaire lighting along this parkway is not up to the standard which is recommended for installation on the parkways now proposed for construction. However, the night accident rate per vehicle mile on this parkway is only 12.5% greater than the daytime rate. Most fatalities have occurred on the unlighted section of the parkway.

Riverside Drive, while it is a four-lane, undivided highway, has many of the other characteristics of a freeway. There were no crossings at grade at the time covered by the records; there is no property frontage or pedestrian traffic, and continuous shoulders are provided for emergency parking. It is considered probable that these shoulders account for the lower daytime accident rate of

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. . . **DEPENDABLE.** Constant, unfailing power supply and maneuverability make them the most reliable trackless transit . . . breakdowns are virtually unknown.

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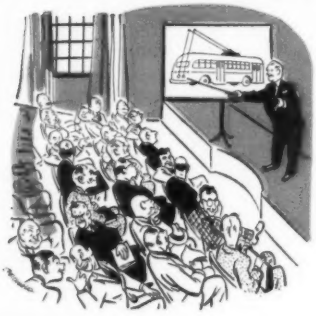

THEY'RE QUIET. You hear only the soft whisper of rubber tires . . . the quiet whir of electric motors . . . no clashing gears . . . no noisy engines.

. . . **A PUBLIC ASSET.** It's a matter of record that trackless-trolley lines enhance property values . . . an asset to any community.

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THEY'RE MANEUVERABLE. Their ability to swing wide around obstructions, or to pass "local" coaches on the same overhead system, speeds up all traffic.

. . . **DEPENDABLE.** Unfailing, unlimited power source, plus reliability of electric drive, keeps Trolley Coaches moving in all weather over any terrain . . . no freeze-ups . . . no overheating.

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this boulevard than the Arroyo Seco Parkway on which no provision is made for disabled cars to leave the traveled roadway. Riverside Drive is a city street of major importance and is lighted only with token lights spaced at long intervals. The night accident rate is 75.5% greater than the daytime rate on this highway or 79.8% greater than the night-time accident rate on the Arroyo Seco Parkway, though the daytime rate is 17% less than the daytime rate on the Arroyo Seco Parkway.

I do not know of any major expressway in any urban area of this country which does not have continuous illumination by means of fixed lighting standards and luminaires. These include such parkways in the New York area as the Henry Hudson, Belt Parkway System, Grand Central, Whitestone, Hutchinson River, East River Drive, Queens Boulevard, and West Side Elevated; the Lake Shore Drive in Chicago; the Davisen Expressway in Detroit; Verity Boulevard in Dayton, Ohio; the 12-lane Newark-Elizabeth Highway, and many heavily used suburban highways in New Jersey.

Of the many expressways being planned for early construction throughout the country, the following are being planned with continuous fixed lighting to be installed at time of construction:

The Brooklyn-Queens Expressway in New York
The Congress Street Superhighway and others in the Chicago Area
The John C. Lodge and the Edsel Ford Crosstown Expressway in the heart of Detroit
The extensive freeways being planned for Cleveland
The urban connections of the New York State Thruway with possibility that the entire length may be lighted.
The Houston-Galveston Expressway

In all of these being planned, the agency or agencies constructing them are paying the cost of the lighting installation. In cases where part of the cost of the expressways is being paid for by the Public Roads Administration, this agency is paying its share of the light. In some cases, as in Cleveland and Chicago, the cities are cooperating with the state and Federal Government in the over-all financing of the projects.

Public Roads Administration officials have stated on many occasions that it is their policy to match state highway funds for highway lighting installations and that it is only necessary for the various highway departments to present plans including lighting with a statement of its necessity in order to obtain funds for this purpose.

I am confident that none of the expressways I have mentioned above carries or will carry more traffic than the Bayshore Freeway in San Francisco, East Bay Freeway, the Balboa Freeway in San Diego, or the parkways planned for the Los Angeles Area.

Lighting Cost a Small Proportion

One of the arguments advanced for not including fixed lighting along expressways is the high cost of installation and maintenance.

A report of the Committee on Highway Lighting of the Highway Research Board, published in the *Proceedings* of the 25th Annual Meeting of said Board, has made a thorough analysis of such costs. Systems of fixed illumination were set up for two typical freeway designs and for two levels of illumination. Cost estimates are then prepared for these installations.

One of the freeway designs, typical of those proposed for the California expressways, consists of two 36-foot pavements separated by a 10-foot median strip. Costs are established for levels of 0.45 foot candle and 0.80 foot candle on a horizontal plane at roadway level. As the 0.80-foot-candle level corresponds to recommendations of the Illuminating Engineering Society's Committee on Streets and Highways for urban expressways carrying heavy night traffic, only this value will be discussed herein.

The estimate for this freeway is based on street lighting poles placed along the sides of the expressway in a staggered arrangement. Estimates are prepared for reflector-refractor types of filament lamps, sodium vapor, and mercury vapor luminaires. Mounting heights are 25 feet except for 15,000-lumen filament lamps for which heights are 30 feet. Spacings vary from 100 to 170 feet between poles on each side of roadway.

Allowing for ramps, extra cost of under-bridge lighting, and adjusted prices for present index of construction, the cost per mile of freeway would vary from $30,000 for 10,000-lumen filament lamps to $32,000 for 16,000-lumen mercury vapor lamps in first cost and a yearly maintenance cost of about $4,500 per mile.

An independent estimate based on Los Angeles conditions by the Street Lighting Engineer shows a present cost of about $50,000 per mile and $4,000 per year maintenance cost. Assuming an average construction cost of $1,000,000 to $1,500,000 per mile of urban expressway, the first cost of lighting is seen to be a maximum of about 5%.

The provision of fixed illumination only at points where traffic separates, merges or crosses and where permanent physical installations are required to direct and control otherwise conflicting traffic movements, and to points of specific hazard is insufficient for the maximum of safety along the roadways.

The lighting of fixed points of hazard at irregular intervals along the expressway and the omission of lighting along the remainder of the expressway produces the effect to a smaller degree of entering and leaving a series of tunnels. The danger of meeting a stalled car, or cars, making an unforeseen stop or move in the "tunnel" of darkness between the fixed points which are lighted, is a real one and a source of frequent accident.

Recommendations

1. That the State Highway Division review its policy with respect to installation of fixed illumination on state highways with particular reference to urban highways of the expressway type.
2. That standards for the design and placing of lighting poles and luminaires be developed in accordance with recommended lighting standards of the Illuminating Engineering Society and that such designs be used on all projected urban expressway projects.
3. That any partial installation of lighting along an expressway be part of a complete lighting plan of the expressway toward which progressive construction may be directed.
4. That the State Division of Highways include the cost of adequate fixed illuminating systems as determined in accordance with the above standards in the funds allocated to each expressway project.

Excerpts from a paper presented to the Public Works Officers Department of the League of California Cities on September 22, 1947, at San Francisco.

El Dorado To Have Improved Lighting

WORK was started last month on the new street lighting installations for El Dorado, Kans. We have entered into contract with the Kansas Gas and Electric Company for the replacement and rearrangement of existing lights and the installation of 215 additional lights. At present, we have 329 street lights, ranging from 100 to 365 candlepower, their combined output being 480,000 lumens. The new contract provides for 544 street lights with outputs from 250 candlepower in the residential districts to 1,000 candlepower on the primary traffic streets. The combined output of the new system will be some 2,400,000 lumens, five times more than the old system.

L.A. MARTINDALE
City Engineer
El Dorado, Kans.

G-E sodium-vapor luminaires give high visibility on the Charter Oak Bridge, which spans the Connecticut River at Hartford.

Back Street or BIG BRIDGE

early planning means better lighting

Checking light distribution of a modern luminaire in the 110-inch integrating photometer —one of many calculations necessary to prescribe placement of new lighting.

When you need new lighting, you can count on General Electric to help prescribe the right lights for your needs.

An example of successful planning is Connecticut's Charter Oak Bridge. In 1941, before the superstructure construction was started, the Hartford Bridge Commission began working on plans for its lighting. Lights were needed for 842 feet of main spans, 3297 feet of viaducts, and nearly four miles of approaches.

In planning this lighting, the State Highway Department, the Hartford Electric Light Company and General Electric's Illuminating Laboratory co-operated in detailed studies of costs and effectiveness for both incandescent and sodium lighting systems. Based on this preliminary work, 309 sodium luminaires and 27 incandescents were decided upon. While the war postponed completion of the lighting until this year, it was possible, because of the advanced planning, to place all conduit during the construction, and to include luminaires and standards as part of the construction contract.

When You Contemplate New Street Lighting . . .

General Electric Lighting Specialists will be glad to help—in collaboration with the electric-service company, if one is involved—in working out requirements for a bridge, an entire city, or a single corner. While the service furnished Connecticut is more extensive than is usually required, it is an example of the help General Electric can give. Specialists are located in G-E offices throughout the country.

Available Without Cost

This service is available without cost. It is offered by the company that makes every type of light source and luminaire that is economically feasible for any street lighting job—a company that is therefore sincerely interested in seeing that users get equipment that best meets their needs. *Apparatus Department, General Electric Company, Schenectady 5, N. Y.*

GENERAL ELECTRIC

452-58

The main span of Charter Oak Bridge in Hartford, Conn., looking east.

Sodium Lights on Charter Oak Bridge

By **DUDLEY M. DIGGS**
Special Representative,
Lighting Division
General Electric Company

COMPLETION of the new installation of sodium vapor lighting on the Charter Oak Bridge marks another effort by the State of Connecticut to reduce the hazards of night driving.

Plans for lighting the bridge and its approaches were drawn up in June 1941, but government restrictions on wartime use of steel made the contract inactive during World War II, and it was late in 1946 before the work was resumed. The lighting was installed by the Hartford Electric Light Company in accordance with standards established by the Illuminating Engineering Society.

The final lighting installation boasts seven miles of lighted roadway, considering all dual highways twice. The total number of lights used is 338, all of which are sodium except the incandescents on the Pulaski Circle and the ramps of the Whitehead Highway. The sodium luminaires are mounted on 160 single and 89 twin ornamental standards of the fluted tubular type, manufactured by the Union Metal Manufacturing Company.

The lighting fixtures are General Electric sodium vapor luminaires of 10,000 lumens, mounted at a height of 25 feet. Mast-arm lengths from 6 to 10 feet are used, depending upon the amount of overhang necessary for proper light distribution. Luminaire spacing on the span and the main approaches is 125 feet, with twin bracket standards mounted in the center mall with the luminaires perpendicular.

The River Front Boulevard approach, looking south.

The choice of sodium was made only after careful consideration had been given all types of modern luminaires. In addition to its high efficiency, sodium provides maximum visibility in foggy and adverse weather conditions and maximum continuity of illumination.

The first active step towards the construction of the bridge was taken in 1939 with the formation of a five-man committee, the Hartford Bridge Commission. The Commission realized the need for a structure which would provide swift and safe transit into Hartford, as well as an important by-pass for city traffic. On September 5, 1942, the main span with the approach from the southwest and the toll plaza with the East Hartford approach were opened for traffic. In the late fall of 1945, the Conland Highway and the Whitehead Highway were opened to complete the approach system.

The name "Charter Oak" is historically significant and, for this reason, was selected by the Commission as the appropriate name for the bridge. In 1687, King James of England demanded the return of the charter granted to the Connecticut Colony by his predecessor, Charles II. At the meeting in Hartford where the demand for the surrender of the charter was presented to the assembly, the lights were suddenly extinguished, and the charter disappeared during the confusion. A local patriot had seized the opportunity and made away with the document, which he hid in the hollow trunk of a tree. From that time, the tree was known as the Charter Oak. This tree grew in the general vicinity of the bridge and stood there until 1856 when it was felled by a high wind. The Charter Oak was said to be 1,000 years old and in colonial days was venerated by the Indians.

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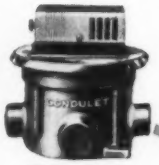
The use of explosive anesthetics has become of much concern to hospital and municipal authorities, as well as to fire and casualty insurance companies. The hazardous locations are not confined to the rooms in which the anesthetics are stored or used, but as determined by the National Fire Protection Association, may extend horizontally a distance of ten feet from the doors opening into such rooms and to a height of seven feet above the floor.

Electrical installations and equipment should conform to the requirements of Class I, Group C locations as set forth in Article 500 of the 1947 National Electrical Code (atmospheres containing ethyl ether vapors). Equipment which is approved only for Group D (atmospheres containing gasoline or similar vapors and gases) is not suitable for Group C locations.

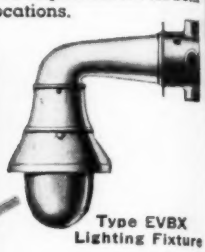
Crouse-Hinds explosion-proof CONDULET electrical hospital equipment meets the Code requirements for both Class I, Group C and Group D locations.

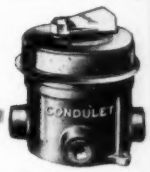


Thermostat

Hand or Elbow Triple Switches

Foot Operated Switch (Standard or Nurses' Call)


Type EVBX Lighting Fixture



Hand or Elbow Switch (Standard or Nurses' Call)

Plug Receptacle

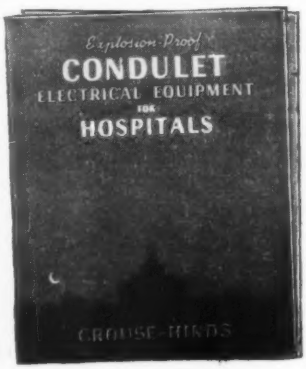
Type EHS3 CONDULET

Blank Cover

Hand or Elbow Duplex Switches

One Signal Light

Two Signal Lights



Type EHS3 explosion-proof CONDULET provides a UNIVERSAL flush wall outlet for concealed conduit installation in these hazardous locations. Adjustable and interchangeable, factory-sealed unit devices fit the EHS3 CONDULET body, thereby providing flush explosion-proof switches, plug receptacles, signal lights, thermostats, or junction CONDULETS as illustrated above.

There are many other explosion-proof CONDULETS including replacement units by which a considerable degree of safety can be achieved in older buildings without a complete new installation. They are all described in Bulletin 2589, "Explosion-proof CONDULET Electrical Equipment for Hospitals". Bulletin 2595, "Electrical Wiring and Equipment for Hospital Operating Rooms", contains facts and figures compiled by the National Fire Protection Association on the hazards in operating rooms arising from the use of highly flammable anesthestics; also gives detailed information on the prevention of such accidents. Send for your FREE copies.

*CONDULET is a coined word registered in the U. S. Patent Office. It designates a product made only by the Crouse-Hinds Company.

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Conventions—When and Where

Conventions listed this month for the first time are indicated by an asterisk (*)

Nov. 17-18—Roanoke, Va.
AMERICAN WATER WORKS ASSOCIATION—VIRGINIA SECTION. Annual Meeting (Hotel Roanoke). Sec., W. H. Shrewbridge, Asst. Engr., State Health Dept., 708 State Office Bldg., Richmond, Va.

Nov. 17-20—Dallas, Texas
CIVIL SERVICE ASSEMBLY OF THE UNITED STATES AND CANADA. Annual Meeting (Baker Hotel). Dir., James M. Mitchell, 1313 E. 60th St., Chicago 37, Ill.

Nov. 17-20—New York, N. Y.
NATIONAL ASSOCIATION OF HOUSING OFFICIALS. Annual Meeting (Hotel New Yorker). Exec. Dir., Robert D. Sipprell, 1313 E. 60th St., Chicago 37, Ill.

Nov. 19-21—Washington, D. C.
AMERICAN WATER WORKS ASSOCIATION—Four States Section. Annual Meeting. Sec.-Treas., W. A. Welch, 748 Public Ledger Bldg., Philadelphia, Pa.

***Nov. 20-21—Augusta, Ga.**
MAINE MUNICIPAL LEAGUE. Annual Meeting. Exec. Sec., Leigh Webber, 97 Water St., Hallowell, Me.

Nov. 20-22—St. Petersburg, Fla.
AMERICAN WATER WORKS ASSOCIATION—Florida and Cuban Sections. Annual Meeting. Sec., Florida Section, A. P. Black, Prof. of Chemistry, Univ. of Florida, Gainesville, Fla.—Sec., Cuban Section, Lauren H. Daniel, Box 531, Havana, Cuba.

***Nov. 24-25—Yuma, Ariz.**
ARIZONA MUNICIPAL LEAGUE. Annual Meeting. Sec., Joe C. Furst, City Hall, Phoenix, Ariz.

Dec. 1-5—Atlantic City, N. J.
AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Annual Meeting. (Chalfonte-Haddon Hall Hotel). Exec. Asst. Sec., Ernest Hartford, 29 West 39th St., New York 18, N. Y.

Dec. 1-6—Washington, D. C.
HIGHWAY RESEARCH BOARD. Annual Meeting (National Academy of Sciences). Dir., Roy W. Crum, 2101 Constitution Ave., NW., Washington 25, D. C.

Dec. 3-7—Cleveland, Ohio
AMERICAN PUBLIC WELFARE ASSOCIATION. Annual Meeting (Statler Hotel). Dir., Howard L. Russell, 1313 E. 60th St., Chicago 37, Ill.

***Dec. 5-6—Clarksburg, W. Va.**
WEST VIRGINIA MUNICIPAL LEAGUE. Annual Meeting. Sec., Patrick E. Maloney, P. O. Box 851, Charleston, W. Va.

Jan. 10-11—Chicago, Ill.
AMERICAN INSTITUTE OF PLANNERS. Annual Meeting (La Salle Hotel). Exec. Sec., Draveaux Bender, MIT, Room 7-335, 77 Massachusetts Ave., Cambridge 39, Mass.

***Jan. 20—New York, N. Y.**
AMERICAN WATER WORKS ASSOCIATION—New York Section. Annual Winter Meeting (Commodore Hotel). Sec.-Treas., R. K. Blanchard, 50 West 50th St., New York, N. Y.

***Feb. 8-12—College Station, Texas**
TEXAS WATER WORKS AND SEWERAGE SHORT SCHOOL (Texas A. & M. College). Exec. Sec., U. M. Ehlers, Director, Bureau of Sanitary Engineering, State Department of Health, Austin, Texas.

Feb. 15-19—Chicago, Ill.
ASSOCIATED EQUIPMENT DISTRIBUTORS. Annual Meeting (Edgewater Beach Hotel). Exec. Sec., Frank C. Knight, 360 N. Michigan Ave., Chicago, Ill.

March 3—Atlantic City, N. J.
ASSOCIATION OF HIGHWAY OFFICIALS OF THE NORTH ATLANTIC STATES. Annual Meeting (Traymore Hotel). Sec.-Treas., A. Lee Grover, Secretary State Highway Dept., Trenton, N. J.

March 11-13—New Orleans, La.
AMERICAN CONCRETE PIPE ASSOCIATION. Annual Meeting (The Roosevelt). Mng. Dir., Howard F. Peckworth, 228 N. La Salle St., Chicago.

***April 7-9—Chicago, Ill.**
MIDWEST POWER CONFERENCE. Annual Meeting (Sheraton Hotel). Sec., E. R. Whitehead, Illinois Institute of Technology, 3300 Federal St., Chicago 16, Ill.

May 3-7—Atlantic City, N. J.
AMERICAN WATER WORKS ASSOCIATION. Annual Meeting (Convention Hall). Sec., Harry E. Jordan, 500 Fifth Ave., New York, N. Y.

National Airport Show And Institute Postponed

THE National Aeronautic Association announced, too late for correction in the October issue of THE AMERICAN CITY, the postponement of the National Airport Show and Institute, originally scheduled for November 4 to 7 in Cleveland.

A lag in the implementation of the Federal Airport Program and the growing scarcity of construction materials are responsible for the postponement, the sponsors state.

The industries directly concerned are being polled by the National Aeronautic Association about the necessity of convening at a later date and the most favorable time for holding the show. A final decision will be announced when the answers have been obtained.

City Manager Appointments

EDGAR W. BLOM, manager of Redwood City since October 1945, has been appointed manager of Santa Rosa, Calif.

F. S. BRADEN has succeeded Hugh Blevins as city manager of Beaumont, Texas.

C. CONGER BROWN, former mayor and banker, has been appointed manager of Duncan, Okla.

W. G. LANTERMAN, engineer, Eaton Co. Road Commission of Charlotte, has been appointed manager of Alma, Mich.

CHARLES E. COLLINS has been named first manager of Carthage, Texas.

RILEY MILAM has been appointed acting manager of Cartersville, Ga., following the resignation of Herbert M. Crane, who resigned to enter private business.

PETER ROAN, formerly of the engineering department, has been appointed acting manager of Wayne, Mich.

LOTT T. ROGERS, of Osborn, Ohio, has been appointed manager of Lancaster, S. C.

E. A. ROLISON, manager of Reading, 1918-26; Santa Barbara, 1926-27; Redwood City, 1929-35; San Mateo County, 1937-38; and until recently at Avalon, Calif., has been appointed at Redwood City, Calif.

WILLIAM T. SOUTH, has succeeded H. W. Robinson as manager of South Salt Lake, Utah.

EVERARD A. WENTWORTH, manager of Bridgton, Me., for the past five years, has accepted the managership of Conway, N. H. He replaces Nat Stevens.

R. W. WHITTEN has succeeded W. W. Coon as manager of Harbor Springs, Mich.

D. B. WILLETT, former manager from January 1943 to April 1946, has replaced M. H. Soule as manager of Laramie, Wyo.

W. K. WILLMAN, city manager, Mt. Pleasant 1924-29; East Detroit, 1929-30; and Mt. Pleasant since 1930, has been appointed manager of Port Huron, Mich.

CLARENCE E. RIDLEY
Executive Director
International City Managers' Association
Chicago, Ill.

The Municipal Bond Market

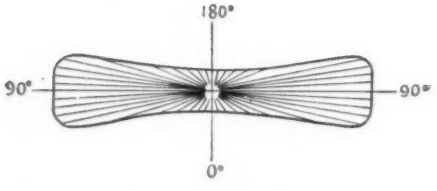
Some sales of new issues reported in October numbers of *The Bond Buyer*:

Amount	*Borrower and Purpose*	*Rate (%)*	*Term Years*	*Basis (%)*
$127,000	Wellesley, Mass., Veterans Housing	1	2.50 Avg.	.862
12,000	Ida Grove, Iowa, Street Improvement	1	2-5 Ser.	.963
65,000	New Brighton, Pa., School District	1.25	11 Avg.	1.23
85,000	Portsmouth, N. H., Improvement and Equipment	1.25	5.33 Avg.	1.23
10,000	Newburyport, Mass., Water Main	1.50	1-10 Ser.	1.373
100,000	Greene Co., Iowa, Public Hospital	1.50	4.50/10.50 O.-A.	1.26
87,000	Fairview, N. J., Street Assessment and Sewer	1.60	3.50	1.576
400,000	Nashville, Tenn., Sewer of 1947	1.70	17.66 Avg.	1.697
49,000	Safford, Ariz., Refunding	1.75	7.75 Avg.	1.805
30,000	Spring Green, Wis., Water Pumping Station	2	8/11.66 O.-A.	1.80
35,000	Davidson, N. C., Water and Sewer	2	16.25 Avg.	2.046
30,000	Kennett, Mo., Public Improvement	2.125	17.50 Avg.	1.224
700,000	Ocala, Fla., Water and Sewer Revenue	2.50	17.66 Avg.	2.473

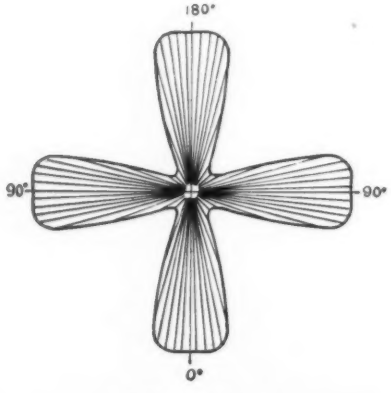
DISTRIBUTION PATTERNS *are Important in* STREET LIGHTING

Holophane Refractors SHAPE THE LIGHT *to the Street*

Typical Residential Street Lighting — I.E.S. Type 1
Photo Courtesy: Detroit Edison Company



TYPE 1 — 2-Way for Mid-Block



4-Way for Intersection

The latest "code" on traffic illumination—"Recommended Practice of Street and Highway Lighting, 1945" issued by the Illuminating Engineering Society, points up the importance of proper light distribution. Five "ideal" distribution types are described to meet most street and highway lighting requirements. *Holophane Refractors have been designed to meet each of these exacting specifications.*

Type I distribution is for luminaire locations that are approximately over the center of the roadway. Two beams of light are projected up and down the street. To insure efficiency and the recommended illumination, light that would fall outside is largely directed to the roadway. *Street lighting units equipped with Holophane 2-Way Refractors will accomplish this result.*

In addition, for street intersections, the Holophane 4-Way Refractor provides two supplementary beams for the cross streets.

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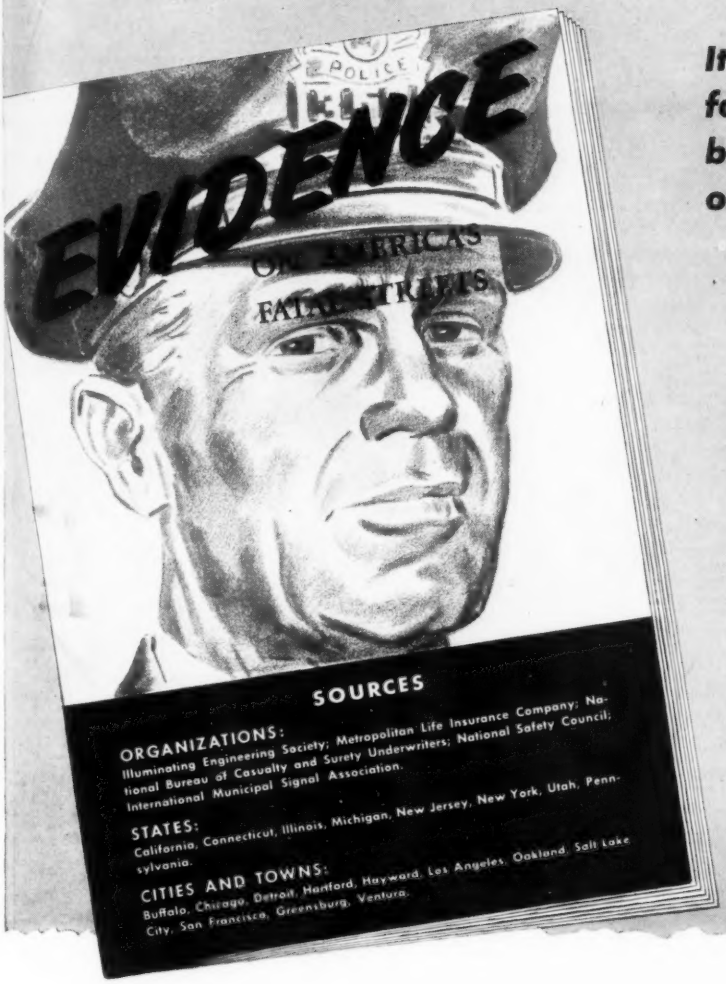
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SOURCES
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STATES:
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CITIES AND TOWNS:
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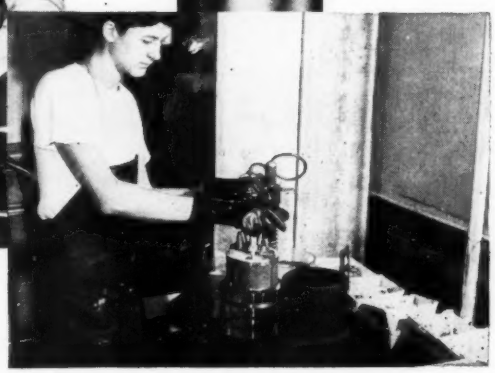
Partial view of Dual's well organized Service Department.



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Municipal and Civic Publications

Public Health Law

PUBLIC HEALTH LAW—*By James A. Tobey, Dr. P.H. LL.D. Commonwealth Fund, 41 E. 57th St., New York 22, N. Y.* 1947. 419 *pp.* $4.50.

Written especially for public health officials, teachers of public health, and attorneys, the third edition of this standard work discusses the basis of laws enacted for the protection and promotion of public health, the law of public health organization and administration, the powers and duties of health departments, personal and corporate liability, and legislation and law enforcement.

First written in 1926, the book has become an indispensable part of every public health and legal library. The new edition has been expanded to include recent alterations in governmental organization and administration, important legislative trends as well as approximately 250 new court decisions.

Health officers, milk, food, and drug inspectors, sanitarians and engineers, and city and town attorneys and solicitors are among the many local officials who will find the work essential for a proper understanding of municipal health functions and responsibilities.

Aviation Law

AVIATION ACCIDENT LAW—*By Charles S. Rhyne, Columbia Law Book Company, 730 Jackson Place, NW., Washington 6, D. C.* 1947. 315 *pp.*

Prepared by the General Counsel of the National Institute of Municipal Law Officers, this volume presents a consideration of all the reported court decisions concerning claims which have arisen out of accidents in which aircraft have been involved. Interwoven with an analysis of the legal principles enunciated in these decisions is a consideration of applicable legislation and international conventions. The volume's chief purpose is to collect the material in one place so that it may be readily available for lawyers who must inquire into liabilities arising out of aviation accidents.

The preface of the book points out that, with the rapid growth of air transportation, the law of aviation accident liability has been developing until, at present, it presents a unique field of the law.

Denver Parking Survey

DENVER PARKING SURVEY—*A Research Enterprises Report. Central Business District Survey, 1441 Welton St., Denver 2, Colo.* 1947. 154 *pp.*

An example of the possibilities of applying commercial market research techniques to city planning problems, the Denver parking study was made by a professional survey firm, in consultation with the staff of Denver University's Bureau of Business and Social Research.

Using sampling-questionnaire techniques of public opinion polls, and similar marketing and advertising research methods, the survey determined how much parking space is needed immediately in downtown Denver and where it should be located.

Building Law Publications

PUBLICATIONS RELATING TO THE PREPARATION AND REVISION OF BUILDING LAWS—*Construction Division of the Office of Domestic Commerce, U. S. Department of Commerce, Washington 25, D. C. C.D. 1.* 1947. 18 *pp. Copies available upon request.*

The pamphlet has been prepared as a convenient reference for the use of officials and technicians responsible for writing and revising laws governing the location, construction, use, and maintenance of buildings and other structures. Divided into two major parts, it lists publications relating to the general subject in Part I, and specific standards or published documents that can be made part of a building law in Part II.

Water Purification

TASTE AND ODOR CONTROL IN WATER PURIFICATION—*Industrial Chemical Sales Division, West Virginia Pulp and Paper Co., 230 Park Ave., New York 17, N. Y.* 1947. 164 *pp. Copies free upon request.*

Beginning with a survey of ancient and modern methods of obtaining sufficient water, this book quickly proceeds to a discussion of the sources of taste and odor pollution, both industrial and natural, and continues with a report of the use of activated carbon for the prevention of the growth of algae in open settling basins and reservoirs.

Profusely illustrated with photographs, drawings, and charts, the book contains specific instructions for the use of activated carbon in various fields of application. Included is a 34-page bibliography for further reference.

Improving Local Finance

LONG-TIME PROTECTION FOR THE LOCAL TAXPAYER—*By John F. Sly.* The Tax Review, *Tax Foundation, 30 Rockefeller Plaza, New York, N. Y. September 1947 issue.* 5 *pp.*

In this article, Mr. Sly makes incisive recommendations for cash basis budgeting, the establishment of credit facilities for deflationary years, and state-wide standards of sound fiscal policy and state supervision of unsound municipalities.

The proposal for the establishment of credit authorities for municipalities is of special interest. Such authorities, as envisaged by Mr. Sly, would be either publicly or privately operated and would provide "operating credits" to local governments in years when tax collections are low. This means that local budgets and local tax rates would be protected against fluctuations in the business cycle, and in times of stress would permit municipalities to borrow for current operations up to the full amount of their anticipated revenues.

The City Manager Plan in Utah

UTAH EXPERIENCE WITH THE CITY MANAGER IDEA—*By B. H. Stringham, Mayor of Vernal City, and Dale W. James, City Manager Tooele City. Institute of Government, University of Utah.* 1947. 12 *pp.*

This booklet discusses Utah's experience with the city manager plan from the viewpoints of a mayor and a city manager, who both recommend consideration of the plan to other Utah municipalities. They indicate, however, that no community should adopt the plan until a thorough study has been made to determine whether the plan offers a solution to its particular problems.

British Planning Act

TOWN AND COUNTRY PLANNING ACT, 1947—*Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y.* 1947. 206 *pp.* $1.15.

The full text of the Town and Country Planning Act of 1947 as it was finally passed is contained in this publication for those who may want to study its important but complicated provisions. As British legislation in the past has often influenced American practices and procedures, the act deserves careful attention by all municipal officials and planners.

State Recreation Services

RECREATION SERVICE OF STATE AGENCIES TO COMMUNITIES—*National Recreation Association, 315 Fourth Ave., New York, N. Y.* 1947. *Mimeo.* 9 *pp.*

Brief state-by-state descriptions of the part time or full time services carried on for community recreation programs are contained in this pamphlet. Thirty-nine states in all are now making available some kind of aid for recreation.

Plan for Fort Madison

IMPROVEMENT AND DEVELOPMENT PROGRAM RECOMMENDED FOR THE CITY OF FORT MADISON—*By the Mayor's Civic Planning Committee, Lee County Savings Bank Bldg., Fort Madison, Iowa. September* 1947. 178 *pp.*

This is an outstanding example of the way that prominent citizens of a community can work together and combine their resources to draft a comprehensive, correlated program of public improvements for the guidance of municipal officials.

The report's recommendations were drawn with careful consideration of their financial practicability. Separate project committees were responsible for each of the sections. Their recommendations were classified by a correlating and finance committee as "urgent," "necessary," or "desirable." According to the letter of transmittal by Robert O. Thomas, General Chairman of the Mayor's Civic Planning Committee, the groundwork has now been laid so that when conditions change, Fort Madison will be in a position to take immediate advantage of that change.

Road Builders' Committee Reports

MUNICIPAL DIVISION COMMITTEE REPORTS—*American Road Builders' Association, 1319 F St., NW., Washington, D. C. Municipal Bulletin No. 124.* 1947. 20 *pp.*

The reports in the Bulletin were presented at the February 1947 convention of the American Road Builders' Association in Chicago, at a session of the Municipal Division. Three committee reports are included: on Federal and State Aid for Municipalities; on Property Assessment for Street Improvement, and on Traffic Congestion and Parking Problems.

Denver's New Charter

A NEW CHARTER FOR DENVER—*By Lawrence C. Martin, Bruce Gustin, and Robert Stapp. Published by* The Denver Post. *Copies available from the National Municipal League, 299 Broadway, New York 7, N. Y.* 1947. 22 *pp.*

Reprints of articles by members of *The Denver Post* staff on how various forms of municipal government are operating throughout the country, and lessons that can be applied from this experience. Denver's new city charter is to be voted on November 13th.

Cleveland Shopping Centers

SHOPPING CENTERS AND STREET FRONTAGE—*By Howard Whipple Green. Cleveland Real Property Inventory, 1001 Huron Rd., Cleveland 15, Ohio.* 1947. 54 *pp.*

This is a minute analysis of retail store outlets and trends in the Cleveland area. The many pages of tables furnish precise information on a geographical basis within the area of the growth and development of shopping centers and the street frontage occupied.

County Organization

COUNTY BOARDS AND COMMISSIONS—*Bureau of the Census, Department of Commerce. Governmental Organization No. 2. June* 1947. 94 *pp. Available from Government Printing Office, Washington 25, D. C.* 50 *cents.*

This second report in the Census Bureau series on governmental organization deals with two aspects of county government: county governing bodies by whatever title they may have, including fiscal bodies which may exist collaterally to the governing bodies, and those special-function boards and commissions which are an integral part of county government.

The characteristics of these bodies, boards, and commissions are summarized for the United States as a whole, and their various patterns of organization within and among the states are presented in detailed tabulations.

ANCHORAGE SHOWS the WAY

Anchorage, Alaska, is a modern city with a road-maintenance system that few other American towns of its size can match.

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A Community Notebook

COMMUNITY WISE—*Compiled by Edna H. Porter. Department of Data and Trends, National Board, YWCA. The Woman's Press, 600 Lexington Ave., New York 22, N. Y.* 1947. 64 *pp.* 75 *cents.*

This notebook is prepared for professional workers and should be of use to board and committee members in social agencies and educational and religious institutions. It provides space for recording facts and opinions about various aspects of community life and activity. The headings and the suggestions for jottings on each page are an excellent guide toward the appreciation of community characteristics. Adequate space is provided for the systematic building up of information so that the notebook will be a useful record.

Community Safety

MAKE YOUR TOWN SAFE!—*By Herbert Yahraes. Public Affairs Committee, Inc., 22 East 38th St., New York 16, N. Y.* 1947. 32 *pp.* 20 *cents.*

The proper kind of community organization is the most potent weapon available for reducing the number of accidents, declares this pamphlet. Many illustrations are given showing how community safety programs have been organized, and how the help of the average citizen can be enlisted in safety campaigns.

Lawns and Plantings

YOUR LAWN AND PLANTINGS—*Detroit Housing Commission, the City of Detroit. Charles F. Edgecomb, Director-Secretary.* 1947. 8 *pp.*

Aimed at tenants of public housing projects in Detroit, the booklet declares that the maintenance of grounds is one function in which Public Housing reasonably expects participation by tenants to the fullest practical extent. The booklet contains all information necessary for tenants to maintain their lawns and shrubbery and should be of considerable assistance in stimulating tenant interest in improving their community surroundings.

Social Welfare Public Relations

HOW TO INTERPRET SOCIAL WELFARE—*By Helen Cody Baker and Mary Swain Routzahn. Russell Sage Foundation, 130 E. 22nd St., New York 10, N. Y.* 1947. 141 *pp.* $2.50.

Professional workers, administrators, and volunteers who, day by day, must answer questions, speak to audiences, or write letters and bulletins about health and welfare services will find that this book is more than a basic study course in public relations. It contains many practical suggestions for dealing with specific public relations techniques that can be incorporated immediately in social work programs.

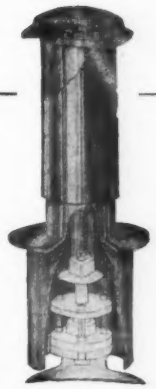
The major contribution of the book is its defining and cataloguing of the various audiences or "publics" as a means of aiding speakers, writers, and contact personnel in the social welfare agencies, and the breaking down of public relations techniques into three main divisions (spoken words, written words, and pictures).

New York Business

NEW YORK MEANS BUSINESS IN THE NEW YORK METROPOLITAN AREA—*New York State Department of Commerce, Albany, N. Y.* 1947. *Illus.* 67 *pp.*

Eleven major economic areas are recognized in New York State, and the New York Department of Commerce is publishing a series of business data books for each area, describing its population, wealth, income, and business activity.

The publications, containing extensive tables and colorful charts and maps, outline the services of the Department of Commerce in promoting sound business opportunity. These services include advice and information on plant location, manpower, business and technical data, foreign trade, community development, and aid to veterans in business. Most of the information in this particular booklet is based on the federal census of 1940, indicating the need for more timely economic data.



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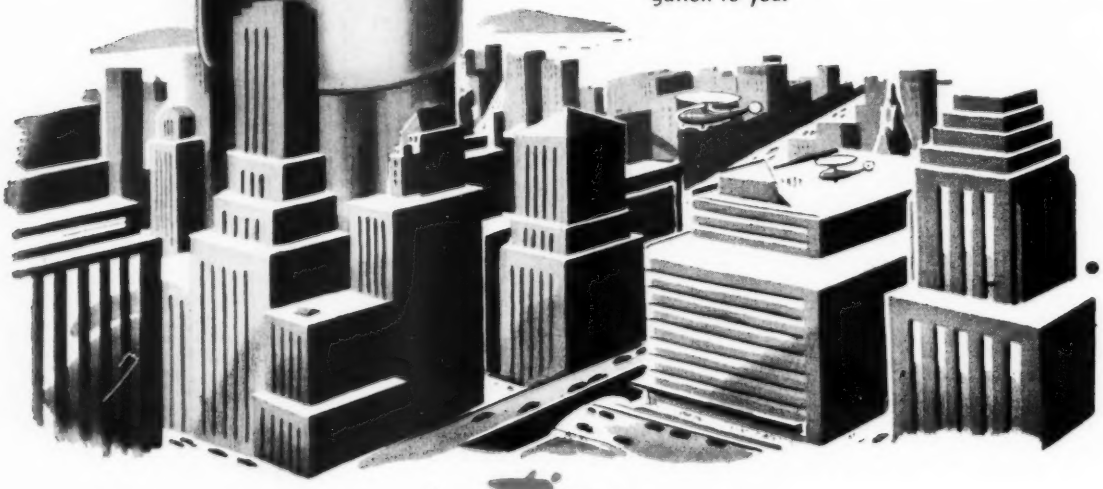

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A Management Manual

THE MANAGEMENT LEADER'S MANUAL FOR OPERATING EXECUTIVES, SUPERVISORS, AND FOREMEN—*Edited by James O. Rice and M. J. Dooher. American Management Association, 330 West 42nd St., New York 18, N. Y.* 1947. 192 *pp.* $3.00.

The Management Leader's Manual was compiled to promote wider understanding of managerial problems and techniques, particularly in the field of human relations. Most of the material in it will be found applicable to municipal managerial situations.

The sections of the manual, which include contributions of a score of management authorities, deal with the management leader's human-relations responsibilities, management leadership in a democracy, interviewing and counseling techniques, and means of diagnosing organization problems. Also included is a section of tests to determine the qualifications for management leadership.

Fire Service Practices

PROVISION FOR FIRE SERVICE BEYOND CORPORATE LIMITS—*League of Virginia Municipalities, 902 Travelers Building, Richmond 19, Va. Report No. 304. August* 1947. 15 *pp.* 50 *cents.*

Based upon a questionnaire survey of Virginia municipal practices, the report contains copies of ordinances, contracts, and agreements governing the use of fire-fighting equipment outside the corporate limits.

City Finances

CITY FINANCES: 1945; VOL. 3, STATISTICAL COMPENDIUM—*Bureau of the Census, Department of Commerce. For sale by the Superintendent of Documents, Government Printing Office, Washington 25, D. C.* 1947. $1.25.

Statistical data are included in this volume on the general revenues, expenditures, enterprises, debt, and sinking and trust funds for each of the 397 cities having 1940 populations over 25,000.

The United Nations

THE UNITED NATIONS, ITS CHARTER AND ORGANIZATION—*Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J.* 1947. 53 *pp.*

Published in an attractive format, the booklet documents the development of the United Nations, its purposes and functions. Although originally prepared by the Department of Public Information, United Nations, the Calco Chemical Division issued the booklet to customers and friends of the company with the desire to promote a better understanding of the international organization.

Parking and Land Values

AN ECONOMIC STUDY OF INTERIOR BLOCK PARKING FACILITIES—*By Charles S. LeCraw. Bureau of Highway Traffic, Yale University, New Haven, Conn.* 1947. 29 *pp.*

Published with funds provided by the Eno Foundation for Highway Traffic Control, Inc., the report deals with some of the economic aspects of providing off-street parking space in the interior of urban business blocks. It is only applicable to localities in which there are urban business blocks whose land use lends itself to such development.

The report originally was submitted by Mr. LeCraw as a student thesis when he attended the graduate course of the Bureau of Highway Traffic. Interesting material is included on land values and the Somers Depth Curve. Graphs show how land values are related to both vehicular and pedestrian volume.

A Revaluation Program

THE REVALUATION PROGRAM IN ROCHESTER—*By Francis S. Brown, New York State Bureau of Municipal Information, Albany, N. Y. Report No. 2,936. Mimeo.* 4 *pp.*

A useful outline of the development of Rochester assessment and valuation procedure, which shows the importance of adequate and accurate land mapping, building surveys, and well-drawn depreciation schedules.

Planning and Housing Reports

CHICAGO, ILL.—Annual Report. 1946. Chicago Plan Commission, 20 North Wacker Drive. 22 pp.

HOUSTON, TEXAS—Land Subdivision. 1940-1946. By the City Planning Commission. Director Ralph S. Ellifrit. Illus. 19 pp.

ILLINOIS—Illinois' Housing Picture. 1947. Illinois Builds for Tomorrow. State Housing Board. Illus. 26 pp.

NEW YORK—The Emergency in Housing. New York State Acts to Meet the Crisis. 1946. An Analysis by Herman T. Stichman, Commissioner of Housing, Division of Housing, State of New York, 270 Broadway, New York, N. Y. Illus. 42 pp.

Other Reports Received

BOSTON, MASS.—Municipal Register for 1946. Compiled and edited by the Statistics Department. 147 pp.

EAST ORANGE, N. J.—Board of Health's 32nd Annual Report. 1946. D. G. A. McLellan, President. Tables. Illus. 84 pp.

GARDEN CITY, N. Y.—Annual Report of the Incorporated Village of Garden City. 1947. Tables. Illus. 58 pp.

IRVINGTON, N. J.—The Annual Report of the Town of Irvington. 1946. Municipal Accounts. Tables. 82 pp.

LEWISTON, IDAHO—Annual Report, Engineering, Airport, Water, and Street Departments. 1947. W. P. Hughes, City Engineer. Tables. Charts. Illus. 49 pp.

LOS ANGELES, CALIF.—Organization, Administration and Management of Administrative Services. 1947. Bureau of Budget and Efficiency. Charts. Mimeo. 25 pp.

MARQUETTE, MICH.—Reports of the City of Marquette. 1946. City Manager James R. Pollock. Tables. Charts. 71 pp.

NEW YORK, N. Y.—All Time High. Recreation—from Coast to Coast. National Recreation Association, 315 Fourth Ave., New York. Illus.

NORTHBRIDGE, MASS.—Annual Reports of the Town Officers. 1946. Tables. Charts. 167 pp.

ST. LOUIS, MO.—Annual Report of the Water Commissioners. 1947. Commissioner Thos. J. Skinker. Tables. Charts. 159 pp.

SARANAC LAKE, N. Y.—The Saranac Lake Study and Craft Guild. Report of Activities. 1947. President Charles H. Haskins. Illus. 32 pp.

TOPEKA, KANS.—Annual Report of the City of Topeka. 1946. Issued by Department of Finance and Revenue. Commissioner J. Glen Davis. Charts. Tables. 58 pp.

VERMONT—Legislative Directory. Biennial Session. 1947. Prepared Pursuant to Law by Rawson C. Myrick, Secretary of State. 694 pp.

CIRCUL-AIR
1/c FIRE HOSE DRYER

WRITE FOR BOOKLET

Illustrates how Circul-Air saves hose, shortens drying time, prevents mildew and rot, air conditions as it dries, improves station design.

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To Locate Water or Steam Leaks
WITHOUT ANY DIGGING!

Fast, dependable, accurate — the Globe Geophone is far superior to any other leak locater. One water department located three bad leaks within two hours . . . their first time using the Globe Geophone! Resembling an over-sized stethoscope, it picks up vibrations of escaping water or steam even when 50 to 75 ft. from a leak.

Complete Geophone outfit consists of connecting tubes, two Geophone discs, headpiece, and heavy leather-covered carrying case with shoulder strap $75

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(*Manufacturers of Geophones Since* 1918)
READING, MASS., DEPT. Y

Please send me further information on items checked below:

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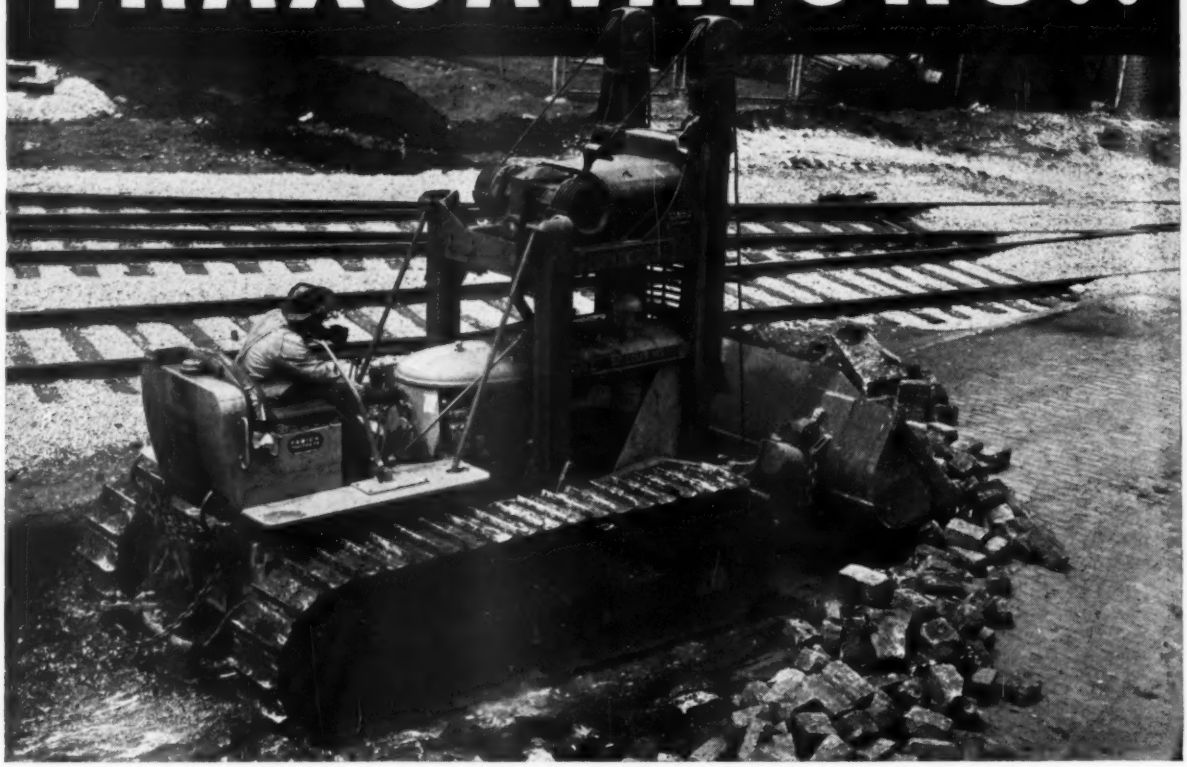
TRAXCAVATORS..



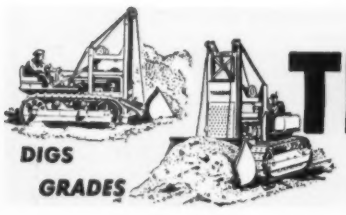
HAVE GOT WHAT IT TAKES!

Tearing up old stone or brick paving, without any initial preparation is tough, heavy work — but not too tough for TRAXCAVATORS. These big, rugged machines take it and other equally-hard jobs in their stride — as though they were built for it . . . and they are!

TRAXCAVATORS are powerful tractor-excavators mounted on "Caterpillar" track-type tractors. They are the most versatile machines of their type in the world . . . do more jobs at lower cost than any other equipment of comparable size, power and capacity.

Put them to work tearing up old pavement, grading, leveling new or old streets, removing snow, loading stone, sand, rock or other material and watch production figures go up and costs come down. User reports from everywhere prove their year-round usefulness and economy.

TRAXCAVATORS are available in four sizes with bucket capacities ranging from ½ to 4 cubic yards — a size for every job and purpose. See your nearest TRACKSON-"Caterpillar" dealer for facts on how TRAXCAVATORS can help you — or write direct to TRACKSON COMPANY, Dept. AC-117, Milwaukee 1, Wis.



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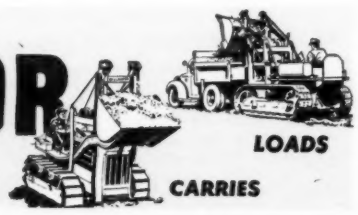
THE ORIGINAL TRACTOR EXCAVATOR



News and Illustrations

Items of interest to city, town and county officials and others concerned with the economical construction and efficient operation of public improvement undertakings

Three-Speed Power Unit Simplifies Pipe Cleaning

The Flexi-Cleaner, manufactured by Flexible Sewer-Rod Equipment Co., 9059 Venice Blvd., Los Angeles 34, Calif., has 3-speed cone pulleys which handle Flexible steel or coiled cleaning rods. Since the couplings are interchangeable and coiled rods may be joined to steel rods at will, the operator can select only the tools necessary for his particular type of work, acquiring additional equipment when actually needed.

The Flexi-Cleaner is portable and reversible, and has a Lamb motor.

For use in pipe or sewer cleaning, the Flexi-Cleaner has a standard-size belt; Browning pulleys; Goodrich roller-bearing rubber-tired wheels; 3-wire grounded electric cord; bronze and needle bearings for friction parts; ½-hp motor, fully reversible, designed for universal alternating or direct current (110-volt, 50-60 cycle); power take-off supplied through a V-belt drive with safety clutch, and automatically-controlled turning through the clutch lever.

Smoke Ejector Speeds Fire Extinguishing

A smoke ejector serves two purposes: it provides greater safety for firemen by quickly removing smoke and gases, and it permits faster extinguishing of fires in cellars, basements, and underground structures.

The Homelite Carryable Smokejector, manufactured by the Homelite Corp., Port Chester, N. Y., weighs 130 pounds complete with its built-in gasoline engine (single cylinder, air-cooled, two-cycle, 1 gallon fuel per 1¾-hour operation). The lightweight non-collapsible duct permits exhausting smoke through windows, doors, or ventilators.

The Smokejector has a capacity of 5,000 cfm with 10 feet of suction duct, 4,900 cfm with 20 feet, 4,750 cfm with

40 feet, and 4,600 cfm with 60 feet. It is 25 inches long, 24½ inches wide, and 24½ inches high.

Eimco To Handle Wright Cord Filter

The Eimco Corporation, Salt Lake City, Utah, has added the Wright Cord Filter to its line of vacuum filters, according to a recent announcement.

The filter will be substantially the same as the one used for the past two years at Perth Amboy, which substitutes a cord for the conventional filter cloth. Its self-washing feature makes possible continuous runs at high filter rates, and its construction, by using cords, allows it to handle successfully a wider range of filter cake.

The Eimco Company plans to demonstrate the filter at the Chemical Show to be held in December in New York by exhibiting a small working model of the filter.

Peerless Pump's New Centrifugal Pump

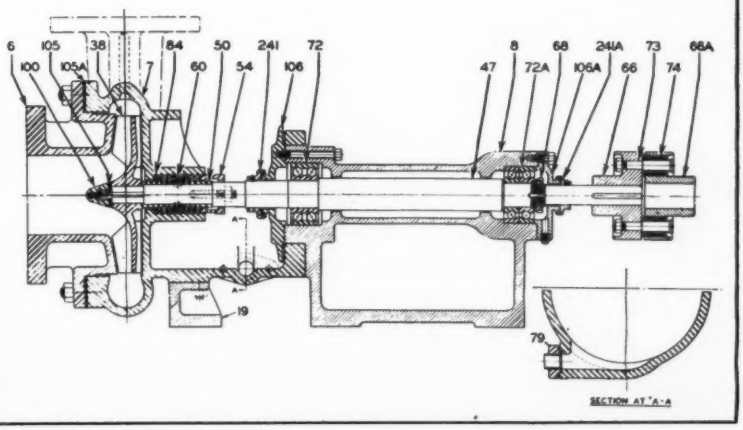
Peerless Pump Div., Food Machinery Corp., 301 West Ave. 26, Los Angeles 31, Calif., has developed a new centrifugal pump, designated as Type ACO, aimed toward helping to reduce costs of pumping corrosive fluids through prevention of corrosion to pump parts.

Incorporating a number of refinements, one of the greatest improvements is the integral casting of the pump volute and the drip pocket; any acid or caustic solution which leaks through the stuffing box, drips on material capable of withstanding the corrosive qualities of the fluid. A large inboard end cap of special alloy is used to prevent any of the liquid being handled from finding its way past the special overhung water slinger into the bearing housing. In addition, the conventional screw type fitting in the drip pocket has been replaced by a flange and two bolts which can be made of stainless steel, eliminating difficulty in disconnecting the drain for replacement or maintenance. To vent the volute, a special passage has been cast integral with the pump case which vents into the discharge of the pump and eliminates the conventional valve ordinarily screwed into the pump case.

The Type ACO is single stage, single suction, and can handle capacities up to 600 gpm against heads up to 200 feet.

PARTS LIST OF PEERLESS TYPE ACO PUMP

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
6	Suction Head	50	Shaft Sleeve	72	Ball Radial Bearing	100	Impeller Nut
7	Case	54	Gland Halves	72A	Ball Thrust Bearing	105	Impeller Nut Gasket
8	Case Frame	60	Water Seal Ring	73	Coupling Pin & Nut	105A	Suction Head Gasket
19	Case Foot	66	Pump Half Coupling	74	Coupling Bushing	106	Inboard End Cap
38	Impeller	66A	Motor Half Coupling	79	Drain Flange	106A	Outboard End Cap
47	Shaft	68	Bearing Locknut & Washer	84	Stuffing Box Bottom	241	Water Slinger
						241A	Grease Guard



THE NEW PARKING METER
ALFCO Twin Automatic
THE GREATEST INNOVATION IN METERED PARKING CONTROL
Old method of a single meter for each single space.
New way of one Twin Meter for every 2 spaces.
Write for full particulars
INTERNATIONAL METERS, INC.
41 EAST 42ND ST. NEW YORK 17, N. Y.
SUBSIDIARY OF
AMERICAN-LAFRANCE-FOAMITE Corporation
ELMIRA NEW YORK U.S.A.
ALFCO

TIFA Units De-Insect Housing Projects

A pair of jeeps bearing TIFA units (the Todd Insecticidal Fog Applicator) sends clouds of white fog impregnated with 5% DDT along the homes of the Rego Park, L. I., Veterans Housing Project, as the opening gun in a city-wide campaign to eliminate flies and mosquitoes from all eight of the housing projects.

George Haiss Mfg. Co. Appoints Sales Manager

Mr. E. J. Seifert, President of Pettibone Mulliken Corporation of Chicago, has announced the appointment of Mr. W. E. Madden as Sales and Division Manager of the Conveyor Division of their wholly owned subsidiary—George Haiss Mfg. Co., New York, N. Y., manufacturer of portable and stationary conveyors, bucket loaders, buckets, and other material-handling equipment.

Mr. Madden has been associated with the conveyor industry in a sales management capacity for the past 20 years, and was Division and Sales Manager of A. B. Farquahar & Company from 1931 to 1947.

Davey Appoints Factory Dealer

The Davey Compressor Co., Kent, Ohio, has appointed Salmon & Co., Inc., 930 Second Ave., North, Birmingham, Ala., as a Class A direct factory dealer, covering the Alabama counties of Sumter, Greene, Hale, Perry, Chilton, Coosa, Tallapoosa, and Chambers.

Nordberg Appointments

L. L. Peterson has been appointed sales manager of the Heavy Engine Section, and H. G. Van Schaack, sales manager of the Gasoline Marine Engine Section of the Heavy Machinery Division of the Nordberg Mfg. Co., 3073 So. Chase Ave., Milwaukee 7, Wis.

CITY MANAGER Wanted

City of Mill Valley, suburb of San Francisco, has position open for City Manager. Engineering and City Manager experience preferred.

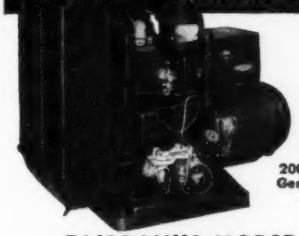
Address:

CITY CLERK

P. O. Box 231

Mill Valley, Calif.

EMERGENCY POWER INSURANCE!



2000-Watt Generating Set

FAIRBANKS-MORSE GENERATING SETS

INSURE yourself NOW against electric power failure. These performance-proved generating sets, installed as stand-by units, will give dependable service even under continuous, heavy-duty operation. A.C. and D.C. types, remote and automatic start, 350- to 35,000-watt capacities. Send today for FREE literature!

Fairbanks-Morse

A name worth remembering

FAIRBANKS, MORSE & CO., Dept. N 11
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Please send free literature on Fairbanks-Morse Generating Sets.

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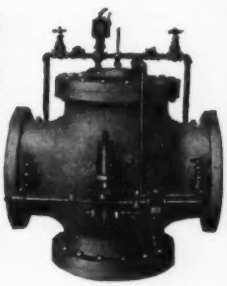
ROSS AUTOMATIC VALVES

Altitude Valves for tank and reservoir, with two sets of controls—Automatic Hydraulic and Electric Remote Control. Hydraulic pilot normally operates the valve, while electric pilot is used for emergency only.

Model 40-DAWR Double Acting Valve may be operated by electric pilot regardless of elevation of water in tank or reservoir, for a break in supply or distribution and when fire pressures require direct pumpage. Model 30-AWR Single Acting Valve may be controlled in same manner.



Model 40-AWR Single Acting semi-throttling valve will close on reversal of flow and the electric pilot would serve only a single purpose — either to open wide or close as emergency may require.

Established 1879

ROSS VALVE MFG. CO.

Incorporated

P.O. BOX 596, TROY, N.Y.

WHEN YOU GO UNDERGROUND . . . . REMEMBER

SAVE INSTALLATION TIME
. . . LOWER COSTS and ASSURE LONG, CONTINUOUS SERVICE

HAZASHEATH. The coated copper conductors are insulated with a strong, resilient wall of moisture-resistant Submarine rubber. Over this goes a tightly wound protective tape. The outer sheath is a thick jacket of Hazaprene, compounded with neoprene, and mold cured under heavy pressure. This Hazasheath Jacket resists oil, acids, moisture, chemicals, and mechanical damage.

ARMORTITE. The conductors are also first insulated with that tough, long-aging, moisture-resistant Hazard Submarine rubber compound. Then several layers of age-resisting, leather-like tape, plastic sealing compound and saturated jute coverings give Armortite its outstanding non-metallic protection that has set records for long, trouble-free underground cable service.

Having no lead sheath or steel armor, Hazasheath and Armortite cables are light in weight, simple, quick and easy to install directly in the ground. The necessary protection for underground installation is built into these cables themselves. When planning circuits for power, street lighting, airports or athletic fields, let your Hazard representative help you select the proper cable for the job. Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pa.

HAZARD

6065

insulated wires and cables for every electrical use

Harley-Davidson Appoints Ebel

Fred E. Ebel has been appointed to the advertising department of the Harley-Davidson Motor Co., Milwaukee 1, Wis. Mr. Ebel's experience includes the positions of publicity director of the Wisconsin U S O Campaign Committee, instructor in radio and electronics at Truax Field, and writer of technical and semi-technical articles and publicity for the Communications & Electronics Division of Motorola, Inc.

Fred E. Ebel

Mr. Ebel will write newspaper and trade journal releases for Harley-Davidson, manufacturers of motorcycles.

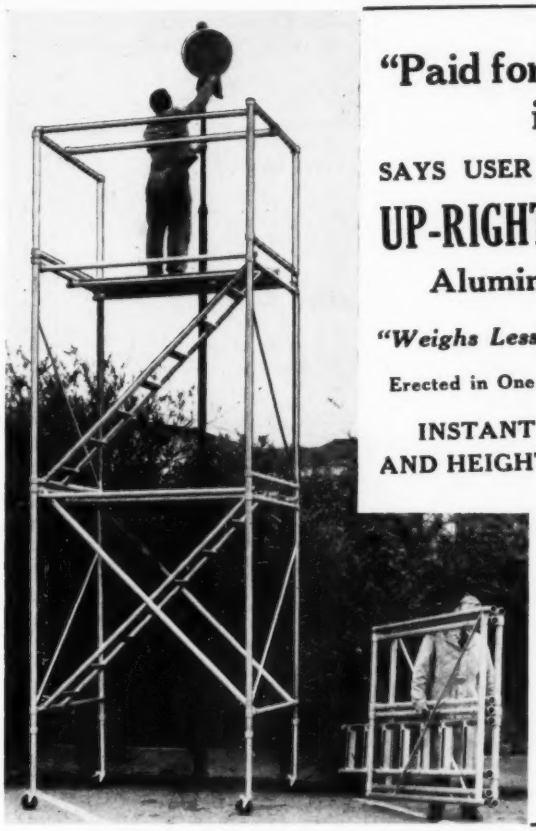
Caterpillar's New Products

The Caterpillar diesel No. 212, powered by the D311 engine.

The Caterpillar Tractor Co., Peoria 8, Ill., has begun production of three new machines, a diesel D2 track-type tractor, a diesel No. 212 motor grader, and a diesel D311 engine.

The new diesel No. 212, for road, street, and airport construction and maintenance, land leveling, terracing, oil mix work, and snow removal operations, has a maximum output of 45 mph and is powered by the D311. The D311 has a 4-inch bore, resulting in a 252-cubic-inch piston displacement and an oil pressure control system which, the manufacturer claims, assures maintenance of proper oil pressure at the bearings even under extreme cold weather starting. Other features include a swirl-type precleaner and a new fuel injection valve design with the pressure-operated valve mechanism enclosed in a copper capsule, easily replaceable as a unit, with no overflow lines required.

The D2 tractor, developing a maximum 32 drawbar horsepower, fits itself particularly well for the handling of auxiliary tools on construction jobs.



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SAYS USER R—— OF HIS

UP-RIGHT SCAFFOLD

Aluminum Alloy

"Weighs Less Than the User"

Erected in One Minute per Section

INSTANT LEVELLING AND HEIGHT ADJUSTMENT

No Loose Parts

Each Section Folds Flat

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for descriptive circular

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Fresh, high quality broom fibres last longer

AFRICAN BASS FIBRES

INDIA PALMYRAH STALKS

The longer mileage you obtain from fresh broom fibres means less time-taking refilling of the broom core and valuable man-hours put to an extra use. The use of fresh, high-quality fibres in your mechanical sweeper is sound economy these days.

We are able to service every need in all types and sizes. We would be happy to receive your request for samples and quotations.

MOUNTAIN HICKORY SPLINTS

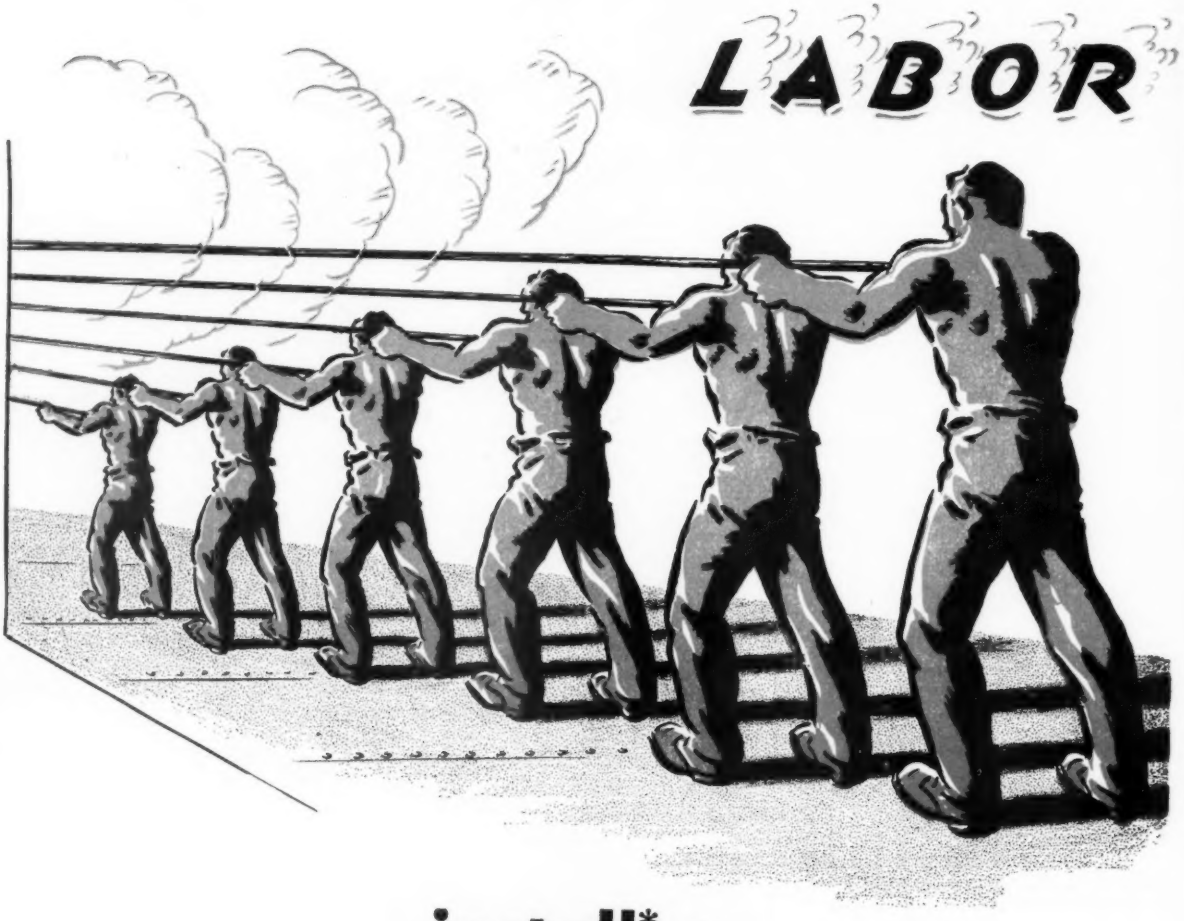
STEEL WIRE SWEEPER STALKS

The OTTO GERDAU CO.

Established 1872

82 Wall Street, New York 5, N. Y.

Cut out this back-breaking



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NICHOLS MONOHEARTH

MECHANICALLY STOKED

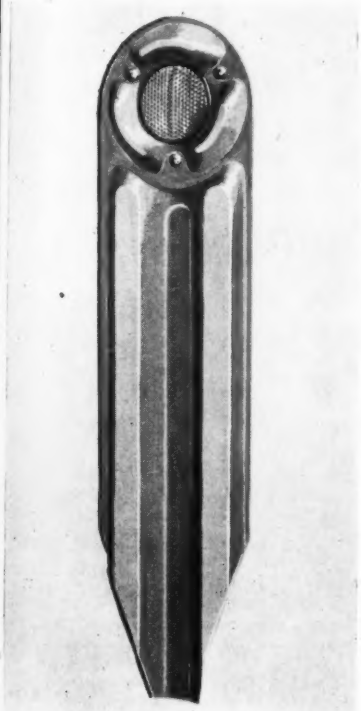
REFUSE INCINERATOR

*OR MODERNIZE YOUR EXISTING INCINERATOR BY INSTALLING A NICHOLS-MONOHEARTH CONE AND STOKING ARMS.

NICHOLS ENGINEERING & RESEARCH CORPORATION
60 WALL TOWER, NEW YORK 5, N. Y.
University Tower Bldg., Montreal, Canada

Taxiway Delineator

As traffic on airport runways increases, the need for taxiways useable 24 hours a day becomes increasingly important. Where present funds are insufficient for a lighting system, a taxiway lighting installation can be provided by use of AGA new Stimsonite taxiway delineators. The delineator consists of two new Stimsonite No. 12 (3-inch) reflectors mounted back-to-back on a specially designed stake. Reflection is provided by the accurate molding of a multiplicity of pyramidal,

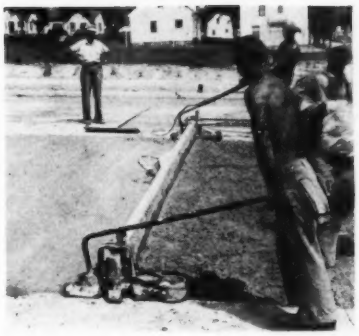


General Electric's Taxiway Delineator.

triple-reflection elements on the back of the reflector. They are installed on both sides of the taxiway with the units directly opposite one another, and on a longitudinal spacing of 100 feet. To mark the entrance to a taxiway, or an exit into a runway, install two reflectors side by side on each side of the entrance or exit. Installation is simple. The mechanism is manufactured by the General Electric Co., Apparatus Dept., Schenectady, N. Y.

New Unit for Municipal Paving

A recent addition to the line of concrete vibrators for construction and paving purposes manufactured by the Electric Tamper & Equipment Co., Ludington, Mich., is the Jackson Municipal Paving Unit. This outfit consists of a portable electric screed, adaptable to any practical slab width, operated by a Jackson portable power plant.



The Jackson Municipal Paving Unit at work.

The action of this screed is vibratory rather than reciprocal, and for this reason it is said to be the only screed that will undercut at the side forms, strike-off crowns, both regular and inverted, and work right up to and around manholes and other obstructions. It has a strong tendency to propel itself in the forward direction, can be rolled back for second passes, requires very little effort on the part of the two men who guide it, and does a perfect job of vibrating slabs to a depth of 10 inches. Progress, according to the manufacturers, is exceptionally rapid, the average crew easily placing up to 65 cubic yards of concrete per hour.

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Our Expert Field Representatives

bring Rensselaer's years of valve research and engineering "know-how" to your field of operations!

Enthusiastic SERVICE

by our factory on large orders or simple inquiries. Our Engineering staff gives cheerful attention to even the smallest valve problem.

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Thousands of Rensselaer valves are in constant operation after service for over 60 years.

Double Disc GATE VALVE
Write for Bulletin X

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The Rensselaer Representative in your locality is ready to serve you.

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HORNELL, N. Y. 38 Main Street
KANSAS CITY, MO. 1609 Oak St.
LOS ANGELES, CALIF. Subway Terminal Bldg.
MEMPHIS, TENN. 822 Dermon Bldg.
MINNEAPOLIS, MINN. 625 Plymouth Bldg.
OKLAHOMA CITY, OKLA. 817 Braniff Bldg.
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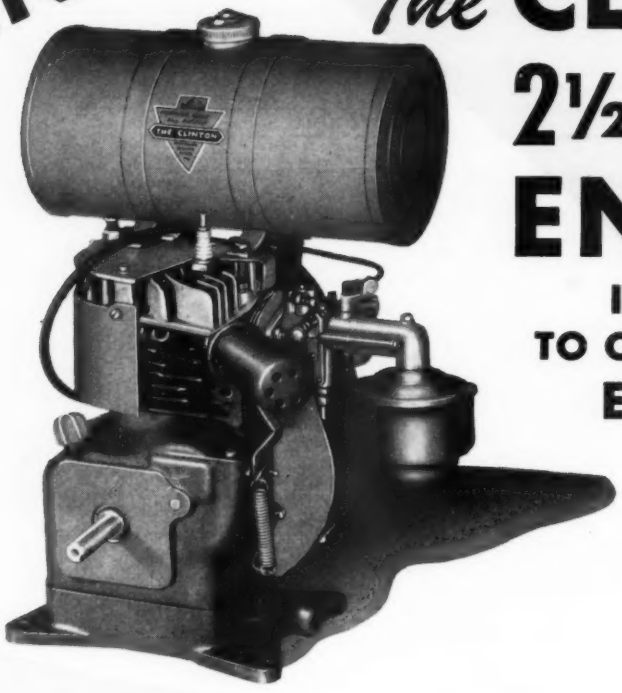
WACO, TEXAS 206 Franklin Ave.

MEET the NEW MEMBER . . .
of this FAMOUS FAMILY

INTRODUCING! *The* CLINTON
2½ to 3 H.P. ENGINE

IN ADDITION TO OUR 1½ to 2 H.P. ENGINES



4 CYCLE
The Precision Built
THE CLINTON
AIR COOLED ENGINE
THE CLINTON MACHINE CO. CLINTON MICH. U.S.A.

IT'S POWERED BETTER WHEN CLINTON POWERED

DESTINED TO BE FAMOUS

Here's a husky—strong—more H. P.—which can stand by itself. . . . We expect a great future for this 2½ to 3 H. P., 4-cycle, air-cooled engine. It is now in production by the world's largest manufacturer specializing in 1½ to 2 H. P. Gasoline Engines.

Yes, we expect great things of this engine. . . . It's New—It's Modern—It's the most outstanding advancement in the fractional H. P. Gasoline Engine field in years. The sound engineering design—the outstanding performance in tests—the acceptance by those who have seen it makes us believe we have a winner under any condition.

You'll welcome this finer quality engine—its DURABILITY—its ABILITY to stay on the job—its attractive PRICE are certain to give it a place in the heart of users, dealers and manufacturers employing compact air cooled power. After you've tested it on your own equipment, you will realize it's a winner.

CLINTON MACHINE COMPANY

Box 100 AC

CLINTON, MICHIGAN

National Water Main Cleaning Co. Appoints

Robert L. Hardman has been appointed chief engineer of the National Water Main Cleaning Co., 50 Church St., New York 7, N. Y.

R. L. Hardman

Mr. Hardman's previous experience includes work on the Moffat Water Tunnel Project in Denver, Colo., and seven years of engineering in the Panama Canal Zone, three as a civilian engaged in water works construction defense projects, and four with the Corps of Engineers, U. S. A., as maintenance engineer of the Pacific side water system.

Milwaukee Hydraulics Appoints Beriswill

The Milwaukee Hydraulics Corp., P. O. Box 2612, Milwaukee, Wis., has appointed W. G. Beriswill as assistant sales manager.

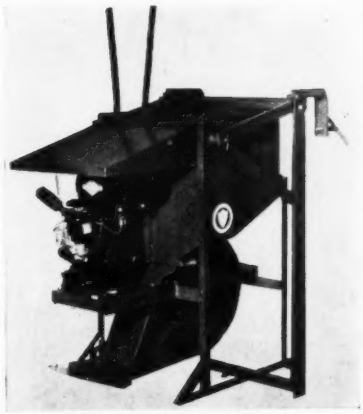
W. G. Beriswill

Mr. Beriswill's background includes work in the crane-excavator manufacturing field as engineer and salesman. He was employed as division sales manager for Osgood Co. and General Excavator Co. of Marion, O. His work for Milwaukee Hydraulics, manufacturers of the Hydro-Crane, will consist of appointment of and work with distributors of the Hydro-Crane.

The Tarco "Scotchman" Proves A Thrifty Salt Spreader

The Tarco "Scotchman" is a mechanism intended specifically for the application of clear rock salt to accomplish the rapid disintegration of ice and to prevent its bonding to the road or street surface. It employs a new principle to obtain a perfect "bird shot" pattern for minimum salt consumption, and phenomenal economy is claimed because of the perfection of the pattern, the absence of rings or streaks, and because no material is thrown over the bank or under the truck.

The width of application and the direction of application from 3 to 24 feet, left, right, or full width at speeds up to 25 mph, are under the operator's constant control. The spreader is self-



The Tarco "Scotchman" arranged to receive bulk material from the body of the truck.

leveling, and it applies either bag salt or bulk salt direct from an elevated truck bed.

The salt impeller is mounted on sealed, self-aligning annular ball bearings; the hopper, spouts, spreader and other parts of the mechanism are constructed of stainless steel. The hopper capacity is 200 pounds of rock salt. The "Scotchman," manufactured by the Tarrant Mfg. Co., Saratoga Springs, N. Y., can apply up to 300 pounds per minute and as little as 240 pounds per mile. The hanger frame and spreader have a total weight of 240 pounds.

You Can Have Control!

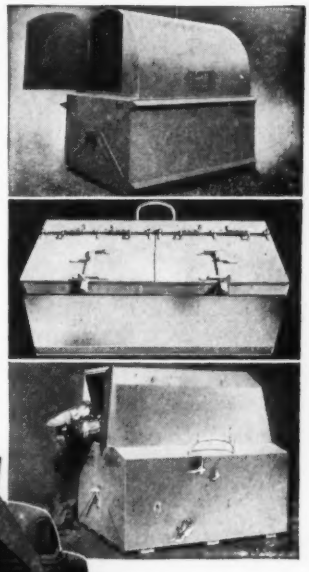
Mueller Gate Valves offer a low cost method of controlling water in a distribution system as they provide the means for a positive shut-off, are easily installed, and are adaptable to meet the demands of most operating conditions. They may have rising or non-rising stems, open either right or left, and due to their exclusive construction features, they will operate with equal efficiency when installed vertically or horizontally.

The Gate Assembly contains the 4 POINT WEDGING MECHANISM. When the valve is closed, pressure is applied at 4 POINTS near the outer edges of the discs. This prevents warped or sprung discs and prevents any chance of leaking. Before you replace any old valves or install new ones, be sure you know all about this superior Mueller Gate Valve. Write us for full information.

MUELLER CO.

YOUR TOWN CAN HAVE EFFICIENT, SANITARY RUBBISH DISPOSAL

Join other progressive cities who enjoy clean, economical rubbish collection with the Dempster-Dumpster system. Detachable truck bodies—rubbish depositories—placed where needed, receive the rubbish . . . a truck hoisting unit picks them up when needed, hauls, dumps and returns them to place. Entire operation handled by truck driver. One truck hoisting unit with several bodies does the work of 4 or 5 ordinary trucks. A type of body available for every requirement. Write today for complete information.



DEMPSTER DUMPSTER
TRADE MARK REG.

DEMPSTER BROTHERS, INC.
3117 Springdale
Knoxville 17, Tenn.

Day or night you can count on

One of the three Haiss Snow Loaders owned by The City of Cambridge, Mass.

Haiss Snow Loaders

Haiss snow loaders fill trucks fast, cleaning up congested traffic areas in a few hours.

They are designed for 24-hour operation in very cold weather. Communities which have a big snow removal problem run them day and night. These machines are highly mobile, and get about quickly between working locations under their own power.

Each Haiss snow loader does the work of 80 men, and loads 15 yards a minute. It reduces truck rentals by $200 to $300 or more per 8-hour shift.

Because of the chopping action of the propeller blades, and the positive upward lift of the conveyor scoops, this rugged machine is thoroughly dependable in hard and frozen snow.

Our nearest sales representative will gladly arrange for you to see one in action.

* * *

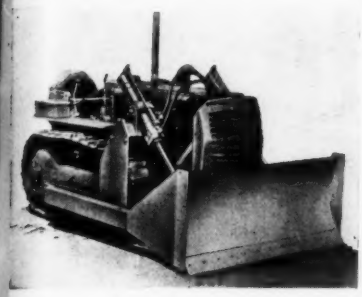
Haiss is now a wholly-owned subsidiary of Pettibone Mulliken Corporation of Chicago. With new management and much larger resources, Haiss can now do a still better job for its customers... better machines and servicing, larger production, quicker deliveries.

Haiss specializes in equipment to load bulk materials... snow, sand, gravel, stone, coal, top-soil, etc.

Its machines are money-makers for their owners.

GEORGE HAISS MANUFACTURING CO.
140th Street & Park Avenue
New York 51, N. Y.

Newly Designed Bulldozer Marketed by Wm. Bros



The new Bros Power-Plus straight dozer for D4 Caterpillar tractor, showing the "power plus" rams.

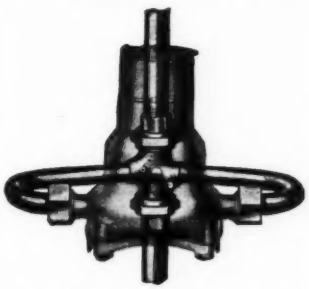
The Wm. Bros Boiler & Mfg. Co., Minneapolis, Minn., is marketing a newly designed bulldozer, the Power-Plus line, for D4 and D6 Caterpillar tractors which incorporates the "fluid power control" provided by the LaPlant-Choate hydraulic pump. This hydraulic system combines pump, valve, and oil reservoir into a single unit.

The models for the D4 are track-mounted, direct-lift, double-acting, with full-floating trunnion rams. According to the manufacturers, it is the first D4 with positive down pressure.

The D6 dozer is frame mounted. Both are available either straight or angle.

COPPERHORNS
the best SETTING

An ideal basement setting for 5/8", 3/4" and 1" water meters.



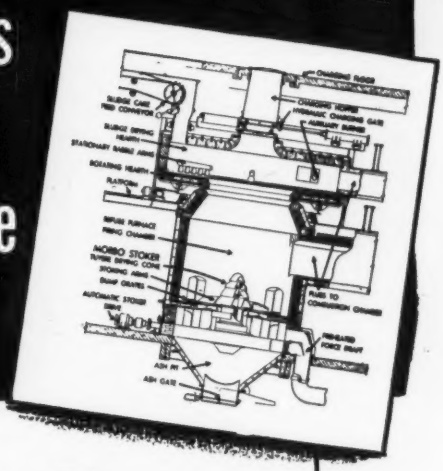
All copper water way . . . Simplest meter setting for vertical pipes . . . Piping is supported in alignment whether meter is in or out . . . For settings in existing piping saves four ells, two meter couplings and one nipple.

Write for catalog and sample.

The FORD
METER BOX COMPANY, INC.
Wabash, Indiana

NO. 2

Destructors for Combustible Wastes



Buy MORSE BOULGER

and you buy . . .

1 — GREATER SELECTIVITY
2 — MODERN DESTRUCTORS
3 — LONGER EXPERIENCE
4 — FULL GUARANTEE

HE progressive, sanitary-minded community will not tolerate open dumps or even ineffective, offensive waste disposal plants. It does want and will approve a unit of modern design and construction that will destroy garbage, trash, sewage sludges, institutional wastes and hospital organic matter without producing offensive smoke or odor.

We are interested in serving such communities because we have much to offer in the way of destructors. There's a Morse Boulger design capable of handling any combination of combustible wastes. Our units are *guaranteed* to give satisfactory results. Our field men stay with the job until it is operating 100% and instruct the crews so that they can carry on. Back of this service is 60 years' experience in the field of incineration.

Discussion of your problem and plans places you under no obligation. If there isn't a Morse Boulger representative near you, write us here in New York.

Morse Boulger Destructors include:

1. **Mechanically Stoked Incinerator, Bulletin 111**
2. **Cell and Hearth Type Incinerator, Bulletin 110**
3. **Rotary Hearth and Stoker Incinerator, Bulletin 111 (illustrated)**
4. **Multi-Zone Furnace, Bulletin 114**

MORSE BOULGER DESTRUCTOR COMPANY
205-R East 42nd Street **New York 17, N. Y.**

Representatives in Principal Cities

PITTSBURGH-ERIC PROCESS RECONDITIONS SMALL MAINS IN PLACE

$60,000,000 worth of pipe capacity is lost annually in water mains like this!

A New Standard of Water Main Efficiency!

Pittsburgh-Eric Process of pipe reconditioning requires that the main be cleaned "down to the metal" before the "LECTUMEN" coating is applied. There are no halfway measures about it, and Pittsburgh has designed special pipe cleaning equipment to do just that! Fullest capacity is restored to tuberculated and incrustated water mains because Pittsburgh-Eric specifications set a higher standard of pipe CLEAN-ness than is ordinarily required. Not only that, but "LECTUMEN" protects the pipe from underlying deterioration, resists organic accumulations, and adds years of useful service to present mains at a fraction of the cost of replacement. Our nearest branch will gladly give you the full story *today!*

Don't Guess! Use Specifications!

For Water Mains
3" to 24" I. D.

LECTUMEN
COATING

- ELIMINATES RED WATER
- MAINTAINS HIGH VOLUME
- ECONOMICALLY APPLIED

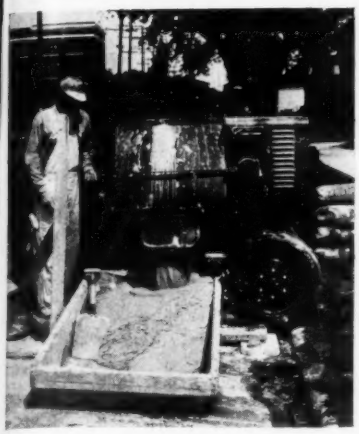
Makes possible a Complete Rehabilitation Program for Your Water System

PITTSBURGH PIPE CLEANER COMPANY

133 Dahlem St., Pittsburgh 6, Pa.

PHILADELPHIA · BALTIMORE · WASHINGTON · NEW YORK · BUFFALO · CHICAGO · CINCINNATI · ST. LOUIS · DETROIT · BOSTON

Plaster-Mortar Mixer Uses Small or Large Crew



Two simple controls start and stop the mixing action and open and close the discharge door.

The Kwik-Mix 6-P plaster-mortar mixer is adaptable for small or large firms. It is simple enough to operate so that a full-time mixer operator is not required, yet it turns out batches rapidly enough to keep a 30-man crew fully occupied.

For small jobs, a plasterer or mason can handle the mixer and still spend most of his time plastering or laying brick. Since a full 6-foot batch is discharged in seven seconds, it can be operated just as efficiently on larger projects.

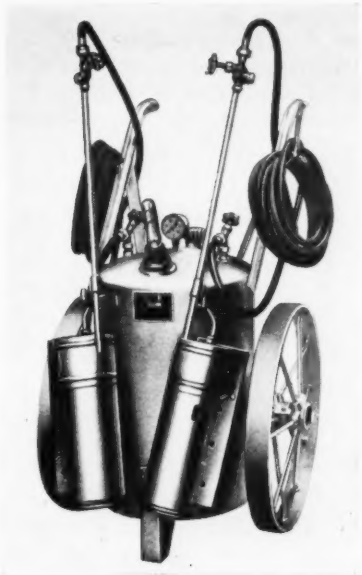
The Kwik-Mix 6-P has saw-tooth mixing blades which keep plaster threads from getting "balled" and an air-cooled engine that requires little attention. It is manufactured by the Kwik-Mix Co., Port Washington, Wis., a Koehring subsidiary.

Thawing Unit on Wheels

Several new models have been added to the heating and thawing line of the Hauck Mfg. Co., 124-136 Tenth St., Brooklyn 15, N. Y. — single and double burner models on wheels, and the Ground Thawing Equipment model No. 548.

Producing an intense, clean, "portable heat" of 2,000° F flame temperature and radiated heat that heats, thaws, melts, and drys, the mechanism may be used on many types of construction jobs and at sand, gravel, and mixing plants to eliminate shut-down because of ice, snow, and freeze-ups. There are no sparks, smoke, or ashes.

The apparatus illustrated here, the No. 215, has a 20-gallon, double valve, heavy steel fuel tank mounted on two steel wheels, with roller bearings, cold rolled steel axle, handle bars with hose



rack, burner brackets, tank leg and foot trip, two 12-foot lengths of oil hose, and two No. 215 burners. The oil consumption of each burner is three gallons per hour. The flame delivered is 4½ inches by 42 inches.

Wickwire Spencer Appointment

H C. Allington has been appointed General Manager of Sales of the Wickwire Spencer Steel Division of The Colorado Fuel and Iron Corp., 361 Delaware Ave., Buffalo, N. Y.

CUT TALL GRASS... WEEDS...BRUSH
Faster and Easier

Ideal for water works, sewage plants, parks, playgrounds, airports, roadsides, vacant lots, tourist camps. Mows fast and clean around buildings, trees, and fences.

Very easy to handle on rough ground, steep slopes or hard to reach places. Cuts 1½" from ground. Does work of 8 men.

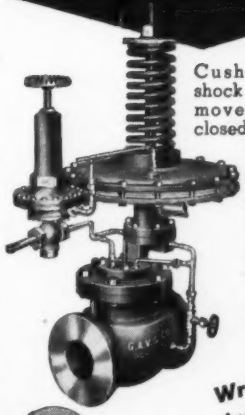
EASY TO LOAD

Light weight of JARI makes it easy for one man to load into truck or car trunk for quick moving. Rugged. Dependable.

WRITE TODAY FOR *FREE* FOLDER

JARI PRODUCTS, Inc.
2934-G Pillsbury Ave.
MINNEAPOLIS 8, MINNESOTA

GOLDEN-ANDERSON
Single Acting Differential ALTITUDE VALVES



Cushioned against shock or jar as valve moves into open or closed positions. Needle valve control will instantly regulate speed of operation to existing pressure condition. 150 lb. to 400 lb. working pressure.

Write for Descriptive Catalog

GA GOLDEN-ANDERSON VALVE Specialty Company
PITTSBURGH 22, PA.

SAVE MONEY THREE WAYS!

The Modern Lawn Mower Sharpener saves you money three ways in your maintenance operations. • Modernize • Standardize • Economize—the Modern way.

Send for FREE Bulletin No. 25A, for details.
MODERN MANUFACTURING COMPANY

160 N. FAIR OAKS PASADENA, CALIF.

This city is riding on a cloud . . .

. . . with happy citizens and busy, ever-growing industries. This city is like hundreds of other cities that are enjoying the benefits of SOFT WATER!

• • •

Every family likes its home water to be free of iron, sediment, bad taste and other impurities. Then too, industrial plants with their new manufacturing methods requiring soft water—*must have it!* In building new plants, Management looks for soft-water communities.

Yes, Permutit*-softened water is a satisfaction to citizens and a necessity to Industry. Without obligation, Permutit's engineers will gladly consult with you. Write to The Permutit Company, Dept. A11, 330 West 42nd Street, New York 18, N. Y., or to the Permutit Company of Canada, Ltd., Montreal.

*Trademark Reg. U. S. Pat. Off.

FOR 34 YEARS WATER CONDITIONING HEADQUARTERS

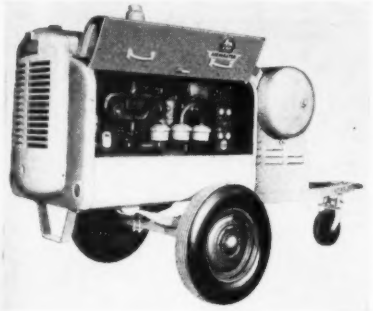
Permutit

Gardner-Denver Opens Three Branch Offices

The Gardner-Denver Co., 102 Williamson St., Quincy, Ill., has opened three new branch offices, to sell and service the company's line of rock drills, pumps, compressors, mine car loaders, hoists, and drilling engines.

The branch office in New Orleans, La., is located at 1034 Camp St., M. B. Morrisette, branch manager; the Cleveland, Ohio, office is at 8015 Carnegie Ave., with R. A. Williams as manager, and the Kansas City, Mo., office is at 2805 Main St., E. C. Wallace, manager.

New Le Roi Compressor On Wheel Mounting



The newest compressor to be announced by the Le Roi Co., 1706 South 68th St., Milwaukee 14, Wis., is the "85" Airmaster, which is liquid-cooled and pressure-lubricated.

The power plant is the Le Roi model D201 valve-in-head engine with replaceable cylinder sleeves, precision bearings, and magneto ignition.

The compressor is regulated by Le Roi's patented Econotrol, which controls the compressor operation automatically according to the demand for air. Electric starting and the exclusive electric Hourmeter are supplied as standard equipment.

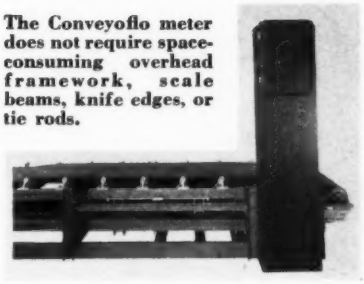
Either a pneumatic-wheel mounting or hard-wood skids Type A may be obtained; full-length tool boxes are standard with either type of mounting.

Flow of Dry Materials by Weight Metered by Diaphragms

A new development in the continuous weighing of sewage sludge on conveyor belts is offered by Builders-Providence, Inc., Providence, R. I., in the Conveyoflo meter. Utilizing diaphragms instead of the usual knife-edge-beam principle, the meter is particularly useful in plants that process sludge for fertilizer or that incinerate it.

The weighing section of the Conveyoflo is supported at one end by self-aligning ball bearing pillow blocks, and at the other end "floats" on a diaphragm which transmits load changes hydraulically to the weighing mechanism. The cyclometer-type totalizer reads directly in any unit desired and is non-cyclical in operation, employing the time-proved disc-and-wheel integrating principle, and is automatically corrected for any belt speed variations.

The Conveyoflo meter does not require space-consuming overhead framework, scale beams, knife edges, or tie rods.



Integration is automatically compensated for by variations in belt weight and for adherence of material to the belt through a system of return belt weighing.

Eimco's New Chicago Office

The Eimco Corp., Salt Lake City 8, Utah, has moved its Chicago, Ill., office from the Conway Bldg., to the Mayflower Bldg., 3319 So. Wallace St., Chicago 16. P. O. Richter, Manager of the Filtration Division, is in charge of the Chicago branch.

PEERLESS

Builds the Pump You Require...in Vertical and Horizontal Types

CAPACITIES: 10 to 220,000 g.p.m.

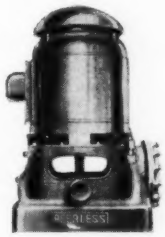
DRIVES: ELECTRIC AND OTHER TYPES

LIFTS: TO 1000 FEET

PEERLESS PUMPS

PEERLESS DEEP WELL VERTICAL TURBINE PUMPS

OIL OR WATER LUBRICATED TYPES

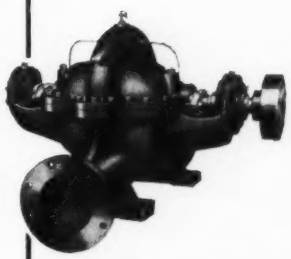


Peerless Vertical Turbine Pumps complement the extensive Peerless Centrifugal Pump line and are adaptable to the widest pumping conditions. Peerless' vertical type pump line includes turbine pumps, propeller and mixed flow pumps, Hi-Lift pumps and domestic water systems for deep or shallow wells. REQUEST BULLETIN.

Peerless Moturbo Drive illustrated

General Specifications:

Capacities, from 15 to 30,000 g.p.m.; *Lifts*, to 1000 feet; *Drives*, electric, gear, belt or combinations. For wells 4" inside diameter and larger. Embodies patented Double-Bearing and Double-Seal Bowl construction.



PEERLESS TYPE A CENTRIFUGAL PUMP

General Specifications: *Capacities*, from 50 to 70,000 g.p.m.; *Heads*, 15 to 300 feet; *Sizes*, 2" to 42" discharge; *Drives*, electric and other types from 1 to 1000 h.p.; *Type*, single stage, double suction, split-case, ball bearing. REQUEST DESCRIPTIVE BULLETIN.

PLAN WITH PEERLESS

For all your pumping requirements, plan with Peerless. Peerless' comprehensive line of pumps includes Underwriters' approved Fire Pumps for plant fire protection, boiler feed and pipe line pumps and scores of vertical and horizontal types offering capacities from 10 to 220,000 g.p.m.

PEERLESS PUMP DIVISION

FOOD MACHINERY CORPORATION

Factories: Indianapolis, Ind. • Quincy, Ill. • Los Angeles 31, California

District Offices: Chicago 40, 4554 North Broadway; Philadelphia: Suburban Square, Ardmore, Pennsylvania; Atlanta: Rutland Bldg., Decatur Georgia; Dallas 1, Texas; Fresno, California; Los Angeles 31, California.

From Contractors & Engineers Monthly for July, 1947

Compaction of Soils Is Conference Subject

ARBA-Sponsored Two-Day Session At Buffalo Covers Practical Methods And Equipment for Soil Compaction; Vibration Is New Development

✦ SOIL compaction and the equipment with which to secure it in embankments, fills, and subgrades were discussed at a recent conference in Buffalo, N. Y. The two-day meeting was sponsored by the American Road Builders' Association Committee on Compaction of Soils, and the Soils Section of the Joint Committee on Development of Highway Construction Equipment of the Highway Research Board and the ARBA. It was attended by 86 highway engineers, contractors, and equipment manufacturers.

Most interesting of the various sub-

BREAK PAVEMENT TAMP BACKFILL *The Low-Cost Way!*

Compaction of soils has long been a source of grief and controversy among contractors and engineers.

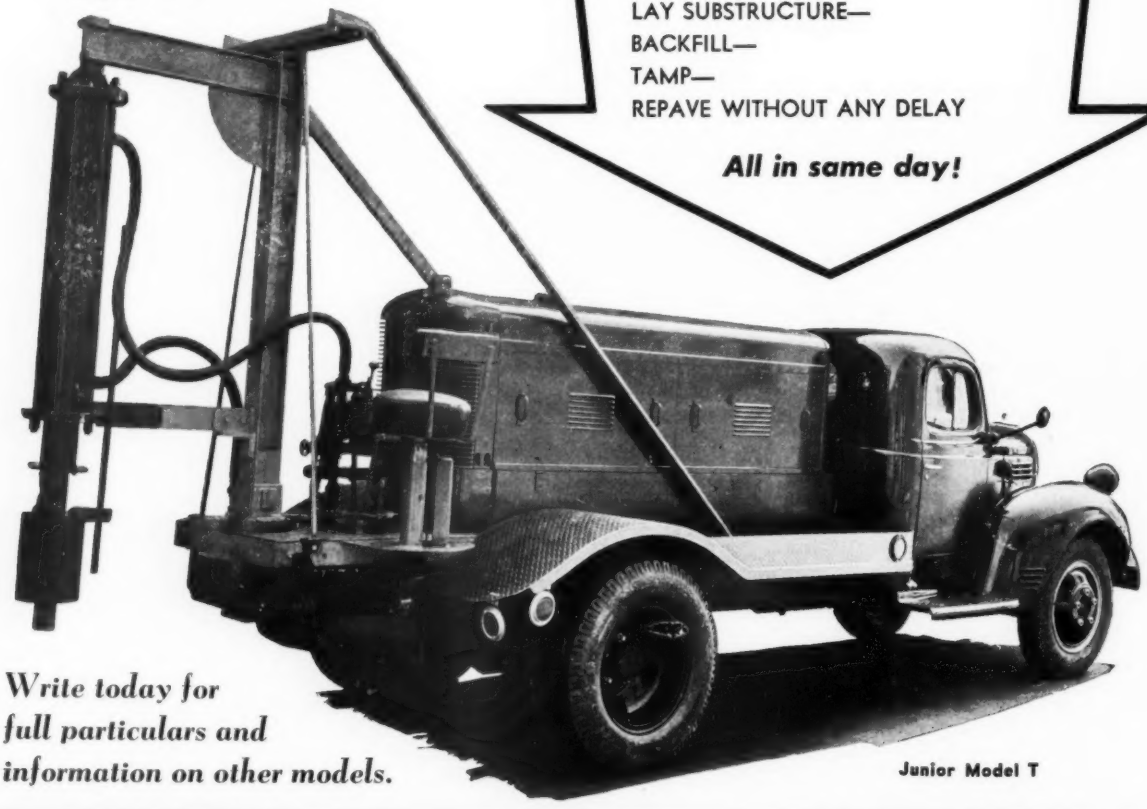
RAPID PAVEMENT BREAKER MACHINES

have proved to be an answer to better compaction at a lower cost!

FASTER because three-foot layers can be tamped at one time.

BREAK PAVEMENT—
DIG TRENCH—
LAY SUBSTRUCTURE—
BACKFILL—
TAMP—
REPAVE WITHOUT ANY DELAY

All in same day!



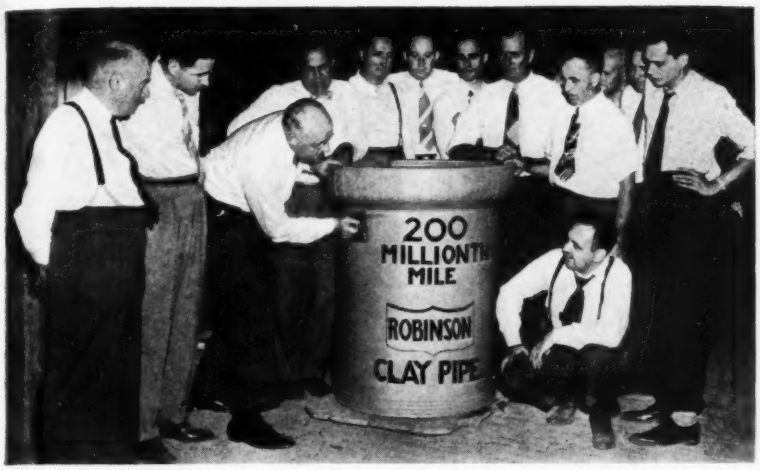
Junior Model T

Write today for full particulars and information on other models.

R. P. B. CORP.

1517 Santa Fe Ave. Los Angeles 21, Calif.

Robinson Celebrates 200-Millionth Mile of Pipe



W. E. Robinson, president of the Robinson Clay Products Co., stamps the company shield on a length of clay pipe that marks the 200 millionth mile produced in that concern's 91 years. The ceremony was a feature of a three-day general conference that saw more than 150 of the company's key personnel congregate in Akron, Ohio.

General Detroit Changes Product Name

The Quick Aid Fire Guard vaporizing liquid extinguisher.

A new name, Quick Aid Fire Guard, will be applied uniformly to all types of portable fire extinguishers manufactured by The General Detroit Corp., 2270 E. Jefferson Ave., Detroit 7, Mich., and its subsidiaries, The General Pacific Corp., and The General Detroit Corp., Canada, Ltd.

Previously, General's eight types of portable fire extinguishers have been sold under the brand names of S. O. S. Fire Guard, CD-Sno Fog, Red Star, Hi-Test, Floafome, Alaskan, Protector, and Pacemaker.

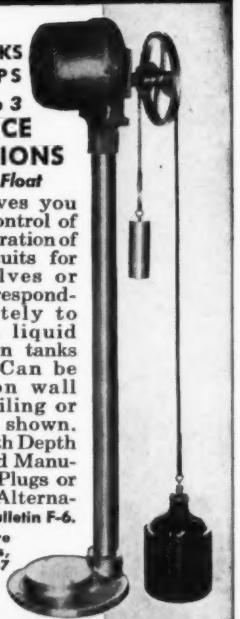
General Quick Aid Fire Guard extinguishers are now available for vaporizing liquid, carbon dioxide, soda-acid, foam, and anti-freeze.

FLOATROL

For
OPEN TANKS and SUMPS
Controls 1 to 3
SEQUENCE OPERATIONS
From ONE Float

Floatrol gives you automatic control of sequence operation of 1 to 3 circuits for pumps, valves or alarms, corresponding accurately to changes in liquid level in open tanks or sumps. Can be mounted on wall bracket, ceiling or pedestal as shown. Available with Depth Indicator and Manual Transfer Plugs or Automatic Alternator. **Ask for Bulletin F-6.**

For control of more than three circuits, ask for Bulletin S-7 on SELECTROL.



AUTOMATIC CONTROL Company
1015 University Ave., St. Paul 4, Minn.

100% Self-Contained

THAT'S SYNTRON

Gasoline Hammer
PAVING BREAKERS

Will Save You Money and Time

Busting
Cutting
Digging
Driving
Tamping

Write for illustrated folder.

SYNTRON CO.
430 LEXINGTON, HOMER CITY, PA.

Fill a 5 cubic yard truck in 15 seconds

BROS *Sno-Flyr*
FASTEST, MOST EFFICIENT SNOW LOADER MADE

The city that owns a *Bros* Sno-Flyr gets double value. Not only is a Sno-Flyr the fastest, most powerful rotary snow plow . . . it's an efficient snow loader and widener as well.

The exclusive *Bros* feeder rake with its vertical and forward action . . . the dual rotors . . . the 170 or 275 h.p. motor . . . all these *Bros* features and more combine to quickly whip up the snow and cast it through loading chutes into haul-away trucks. In just 15 seconds, a *Bros* Sno-Flyr loads *more* snow than can be shoveled into the same truck . . . because it really packs it in. Two men operating a *Bros* Sno-Flyr remove and load as much snow in an hour as can be shoveled by 1050 men.

This saving of equipment and manpower means savings in dollars and cents. It makes a *Bros* Sno-Flyr the most economical as well as the most efficient snow removal equipment a city can buy.

Above right—While the city sleeps, the *Bros* Sno-Flyr clears streets of dangerous snow banks quickly and quietly.

Lower right—Easily attached gathering wings provide 14-foot cutting width, are effective for sidewalk and boulevard snow removal.

WM. BROS BOILER & MANUFACTURING CO.
MINNEAPOLIS 14, MINNESOTA

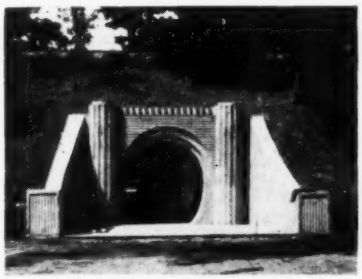
BROS *Sno-Flyr*

THE WORLD'S FASTEST, MOST POWERFUL ROTARY SNOW PLOW

Underpasses for Pedestrians, Conveyor Routes

The underpass, or underground passageway, may be used to transport people, materials, equipment, or livestock from one side of a railroad, highway, or street to the other side. Municipalities may find instances where it is desirable to connect several government buildings together by means of an underground passage; or conduits may be found necessary to give ready access to service pipes and to power or communication lines.

A booklet is being distributed by Armco Drainage & Metal Products, Inc., Middletown, Ohio, which describes the best type and shape of structure for various needs, gives instructions for designing and building underpasses, suggestions as to possible appurtenances, required lighting, and types of bracketing.



This underpass is elaborately treated, in keeping with the surroundings.

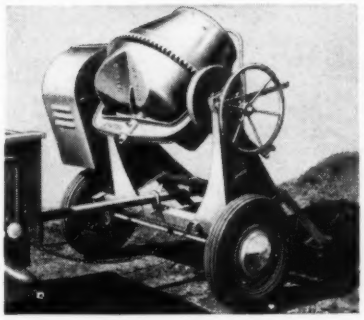
Tips on Buying Tools

Practical suggestions on buying hand tools are contained in the first of a series of *Tips On Buying* to be issued regularly by the National Institute of Governmental Purchasing. This important idea and the first pamphlet are offered by Michael M. Donohue, County Purchasing Agent of Allegheny County, Pittsburgh, Pa. Mr. Donohue is a member of the Board of Directors of NIGP and Chairman of the Institute Committee on Standards and Tests.

End-Discharge, Tilting Mixer

The Jaeger Machine Co., Columbus 16, Ohio, recently announced an improved 3½-S end-discharge, tilting mixer for concrete, plaster, and bituminous materials.

The machine is towed in its mixing position, with the support legs at the rear, so that it may be backed directly up to the material piles and is ready to go to work immediately. Wheelers can approach from either side, take the load in the center of the barrow and leave without reversing direction. When the machine is mixing, the towpole rests in brackets on the front frame. Arrangement of support legs and towpole permit bringing the pole to hitching level by pushing down on it—no lifting is required.



Coil spring suspension, wide-tracking automotive-type wheels with Timken bearings, and low center of gravity make for fast towing of the 3½-S behind a car or truck.

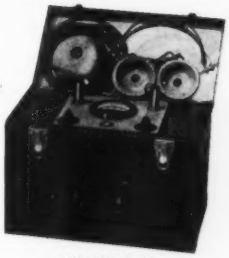
An exclusive patented feature is the V-bottom drum design, which combines with two double mixing blades to produce fast, criss-cross movement of the material. The manufacturer claims that this device doubles the mixing action of any plain bottom mixing drum and adapts the machine to mixture without excessive accumulation of material in the drum and with exceptionally fast discharge action.

The unit is driven by a 2½-hp air-cooled Wisconsin engine.

THERE'S A BETTER WAY
TO DETECT LEAKS
use the
GOLDAK L-46 *Electronic* LEAK DETECTOR

is the unanimous choice of those who use mechanical means of leak detection.

This high-fidelity instrument with an ultra-strong positive signal has a record of 15 very successful years. We guarantee it to be unexcelled. Its use by a wide variety of industries is proof of its unquestioned acceptance.



MODEL L-46
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Remember: GOLDAK INVITES COMPARISON!

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GOLDAK "MIGHTY MIDGET"

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The Goldak Model M is also fully electronic, light weight, compact, versatile, powerful. Has countless applications.

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THE GOLDAK COMPANY
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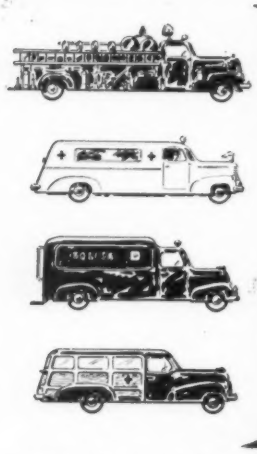
EMERSON TO ~~THE~~ EVERY RESCUE !!!



Fire and police departments . . . rescue squads . . . first aid units . . . public beaches . . . *all* know the *EMERSON Resuscitator* and what it means in saving lives. Medical research and experience have proved the *EMERSON Resuscitator-Aspirator-Inhalator* features to be dependably efficient in every emergency . . . Be sure all *your* municipal mobile and stationary equipment has the latest on-the-spot automatic resuscitator . . . EMERSON'S compact, easy-to-operate unit.

WRITE FOR YOUR COPY OF THE BULLETIN, "ON THE SPOT RESUSCITATION WITH EMERSON."

J. H. EMERSON CO.

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OF GOOD GOVERNMENT

Consideration for the rights and needs of others is a requisite of good government. Streets and Highways, properly and amply marked, gain respect and cooperation from the motoring public.

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M-746

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1824 EAST SECOND STREET · WICHITA, KANSAS

Mylander New District Manager for De Laval

Harvey A. Mylander has been appointed District Manager for Southern California and Arizona for the De Laval Steam Turbine Co., Trenton, N. J.

Harvey A. Mylander

Previously associated with the General Electric Co., the American Hoist and Derrick Co., and International General Electric Co., in Venezuela, Mr. Mylander has had experience in the field of application of heavy industrial equipment. His office will be at De Laval's Los Angeles, Calif., district office, 124 West Fourth St.

Asphalt Institute Opens Illinois Office

The Asphalt Institute, 801 Second Ave., New York 17, N. Y., has been enlarged by one district office and one District Engineer; the office is located at 520 South Sixth St., Springfield, Ill., and Engineer Herman C. Helmle is in charge of it.

Herman C. Helmle

The territory to be covered by Mr. Helmle includes Illinois, Wisconsin, Minnesota, Iowa, Missouri and Arkansas.

Motorcycles of 1948

With the announcement of the 1948 motorcycle models, the Harley-Davidson Motor Co., Milwaukee, Wis., introduces a number of new engineering features.

Overhead valve engine design has been changed to incorporate hydraulic valve lifters of the pushrod type, which compensate for expansion, contraction, and wear of the valve train.

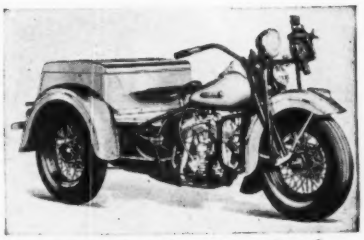
Precise timing and the elimination of frequent tappet adjustment are the advantages declared for this new engineering development, employed only in the engines of some of the highest priced cars and in airplane engines.

Heads are now made of aluminum instead of cast iron, are finned to facilitate additional cooling. Rocker arm bearings are new in design—the lower half is cast iron, the upper half bronze. Rocker arms are shorter, thus resisting torsion, contributing to efficient valve gear performance. Total engine weight has been reduced by 8 pounds.

All lighting and ignition wires are channeled through a neat new terminal box, resulting in less wear and tear on wires. Wires are connected by the new method of crimping instead of soldering.

All new models feature a new edge-lighted speedometer dial. Mileage numerals are screened on the underside of the face glass. Light is introduced horizontally, illuminating the mileage graduations. Accrued mileage and trip mileage graduations are illuminated by direct and reflected light. Numerals are white on black background. A glance reveals the speed and mileage traveled.

Enameled parts of the 1948 models receive the corrosion-resisting treatment of Bonderizing, which imparts a crystalline phosphate coating. All gas tanks are rust-protected internally and externally by the Parkerizing process. Colors are flight red, brilliant black, and azure blue.



The Harley-Davidson Servi-Car has a wheelbase of 16½ inches, a turning radius of 8 feet 4 inches.

HITCH ONTO REAL WORK-SAVING, TIME-SAVING ECONOMY

"FLEXIBLE CARRY-ALL" TRAILER

The complete, compact sewer cleaning tool on wheels. Built like a fire-fighting unit—ready to go on a moment's notice. Hitch it to pick-up or truck right now—it's already loaded. Leave men at the job, with everything they need on the trailer. Use the truck elsewhere. This is the kind of equipment that makes dollars-and-cents-saving sense!

The new "Flexible Carry-All" Trailer packs an entire "Flexible" rodding outfit—Pipe guide, power drive, Ezy rod reel and stand, as well as hose, picks, shovels, rope and red flags. A large, locked tool box helps prevent loss or misplacement of hand tools. Hitch onto a work-saving, time-saving economy that pays off.

Have you seen the latest edition of Flexible's full line catalog? Write for your copy today.

FLEXIBLE SEWER-ROD EQUIPMENT CO.

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855 Board of Trade Bldg. Chicago 4, Ill. · 401 Broadway New York 13 · 147 Hillside Ter. Irvington, N. J. · P. O. Box 165 Atlanta · 41 Greenway St. Hamden, Conn.

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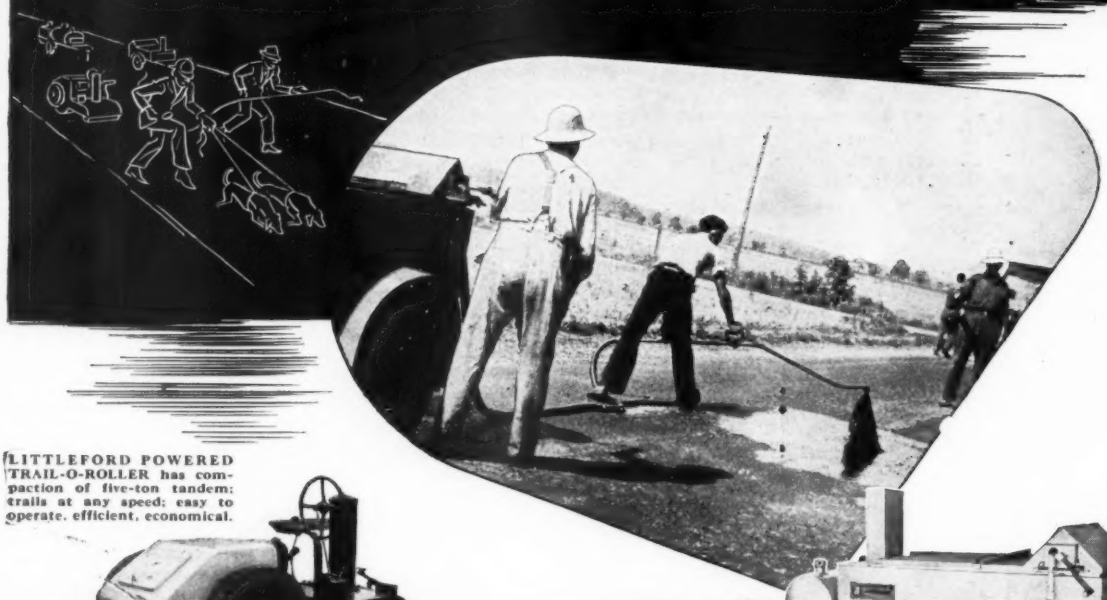
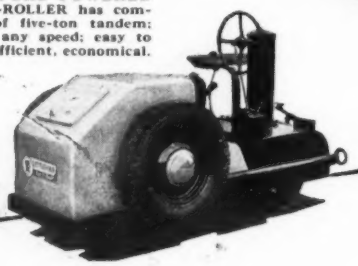
Keep on Top of That Black Top!
REPAIR WITH LITTLEFORD UNITS

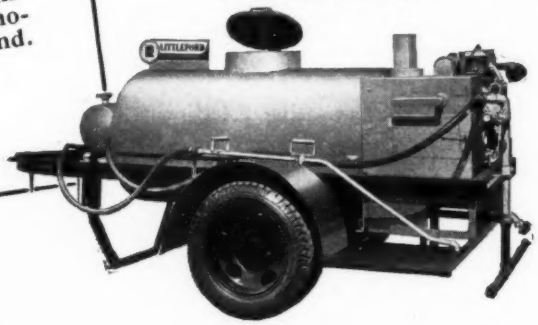


LITTLEFORD POWERED TRAIL-O-ROLLER has compaction of five-ton tandem; trails at any speed; easy to operate, efficient, economical.



Night and day your roads are being pounded by endless traffic. It can't let up and neither can your repair crew. Track down pavement breaks with Littleford bloodhounds. The 84-HD Kettle can repair any road by applying asphalt to stones, gravel, etc. The 84-HD includes double heat circulation and screened reservoir, and these features assure faster heating, faster draw-off of material, and the safest and most economical kettle operation. Combine with Littleford's famous Trail-O-Roller and their No. 101 Utility Spray Tank and you have a combination that really makes for speed and economy, and that's what you want the year round. It's the antidote to black top disrepair!

Littleford 101 Utility Spray Tank is combination of three units: Spray bar for spraying, hand spray for patch work, pouring pot outlet for filling cracks.



BLACK TOP ROAD MAINTENANCE EQUIPMENT LB SINCE · 1900

LITTLEFORD

LITTLEFORD BROS., Inc.

500 E. PEARL ST., CINCINNATI 2, OHIO

Enterprise Head Retires

Charles S. Hoehn has announced his retirement as president of Enterprise Engine and Foundry Co., San Francisco Calif. Mr. Hoehn had started as an apprentice with Enterprise 57 years ago, rising to the presidency in 1917. While in office, Mr. Hoehn was connected with the design and development of numerous industrial products, including oil burners and diversified process machinery and heavy-duty diesel engines. Mr. Hoehn will continue on the Board of Directors and in a special consulting capacity.

Charles S. Hoehn

IBM Elects Officers

The following officers have been elected to the executive board of International Business Machines Corp., 590 Madison Ave., New York 22, N. Y.: J. G. Phillips, previously vice-president and treasurer, to the position of executive vice-president; Thomas J. Watson, Jr., vice-president and a director, to the Executive and Finance Committee; A. L. Williams, controller, to the position of treasurer; Herbert T. Hansford, assistant controller, to the post of controller; Bernard Wiegard, IBM general auditor, to assistant controller. The appointments are in effect and the officials have assumed their new offices.

Pipe Locators to China

The Allen-Howe Electronics Corp., Peabody, Mass., recently made a large shipment of its A/H pipe locators and leak locators on government contract for rehabilitation work in China.

This equipment has also recently been purchased for use in Brazil, Poland, and Russia.

Neptune Appoints Trompeter

Donald P. Trompeter has been appointed to the sales force of the Neptune Meter Co., 50 West 50th St., New York, N. Y. He will make his headquarters in the company's Chicago office. Mr. Trompeter holds a degree in business administration from Northwestern University.

Donald P. Trompeter

WATER WORKS EQUIPMENT FOR SALE

On an "As is—where is" basis

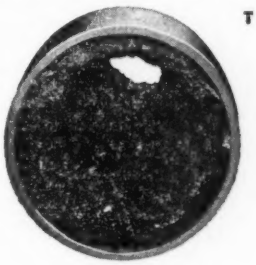
SOFTENING PLANT—Three pressure type water softener units (Paige-Jones Manufacture — Zeolite) with connecting piping and appurtenances. Each unit 72 inches in diameter, 91 inches high. Capacity 600,000 grains hardness between regenerations. Normal softening rate 115 g.p.m., maximum rate 140 g.p.m. each unit.

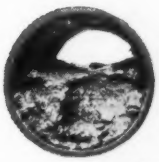
FILTER PLANT — Four Roberts pressure filters with connecting piping and appurtenances. Each horizontal tank 8 feet diameter by 22 feet long. Total capacity of four units approximately 2.0 m.g.d.

Above equipment is located in Brooklyn, New York. For further information inquire

New York Water Service Corporation
515 Ocean Avenue
Brooklyn 26, New York

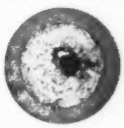
TUBERCULATION





SEDIMENTATION

INCRUSTATION



IF IT'S *CLOGGED*

WE CAN CLEAN IT

In the course of cleaning close to forty million feet of pipe over a period of more than forty years, the National Water Main Cleaning Co. has developed highly specialized methods and equipment for removing practically any type of pipe accumulation or obstruction quickly, economically and thoroughly.

National Know How Pays.

NATIONAL WATER MAIN CLEANING COMPANY
50 CHURCH STREET, NEW YORK 7, N. Y.

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BOSTON.....115 Peterboro Street
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KANSAS CITY.....421 B.M.A. Building
LOS ANGELES.....448 South Hill Street
MEMPHIS.....822 Dermon Building
OMAHA.....3812 Castellar Street
RICHMOND.....210 East Franklin Street
ST. LOUIS.....7103 Dale Avenue
SALT LAKE CITY....149-151 W. Second South Street
SAN FRANCISCO.....681 Market Street
MONTREAL.....2028 Union Avenue
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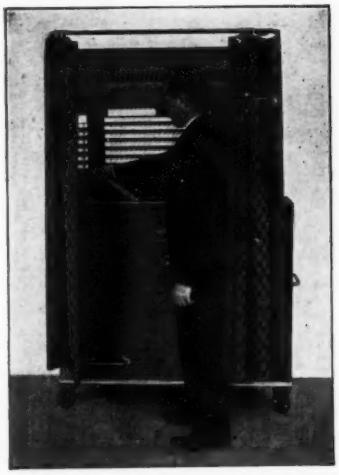
AUTOMATIC VOTING MACHINES

Are the Choice of
3775 Cities and Towns from Coast to Coast

BECAUSE:

1. **Voting is easier and faster**
2. **There are no spoiled or defective ballots**
3. **Absolute secrecy is maintained**
4. **A mechanically accurate count is assured**
5. **The results are known when the polls close**
6. **A permanent record is obtained**
7. **Election expenses are reduced**



Interested Officials, Organizations and Individuals are Invited to Write for Literature

AUTOMATIC VOTING MACHINE CORPORATION

JAMESTOWN 55, NEW YORK

"Builders of Voting Machines Since 1898"

HAND
STORAGE BATTERIES
FOR MUNICIPALITIES

HAND storage batteries are heavy-duty batteries provided with heavy, hand-pasted tank-formed plates, heavy glass mats, acid and heat resisting micro-porous rubber separators, splash decks and genuine hard rubber containers. Built for use in Police Radio cars, Sanitation trucks, snow plows, sweepers, emergency trucks, ambulances, and fire apparatus.

The Hand Laboratory, Nyack, N. Y.

Statement of the Ownership, Management, Circulation, etc., Required by the Act of Congress of March 3, 1933, of The American City, Published Monthly at New York, N. Y.; October 1, 1947.

State of New York, County of New York ss.:

Before me, Notary Public in and for the State and County aforesaid personally appeared EDGAR J. BUTTENHEIM, who having been duly sworn according to law, deposes and says that he is the President and Business Manager of the American City Magazine Corporation, Publishers of THE AMERICAN CITY and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of March 3, 1933, embodied in Section 537, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, AMERICAN CITY MAGAZINE CORPORATION, 470 4th Ave., New York 16.

Editor, HAROLD S. BUTTENHEIM, 470 4th Ave., New York 16.
Managing Editor. None.
Business Manager, EDGAR J. BUTTENHEIM, 470 4th Ave., N. Y. 16.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock).

AMERICAN CITY MAGAZINE CORPORATION, 470 4th Ave., N. Y. 16.
Stockholders: EDGAR J. BUTTENHEIM, 470 4th Ave., N. Y. 16; HAROLD S. BUTTENHEIM, 470 4th Ave., N. Y. 16; MARIAN V. BUTTENHEIM, Yonkers, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are: (If there are none, so state). None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders, and security holders as they appear upon the books of the company but also, in cases where the stockholders or security holder appear upon the books of the company as trustee or in any other fiduciary relation, the names of the person or corporation for whom such trustee is acting, is given, also that the said two paragraphs contain statements embracing affiants' full knowledge and belief as to the circumstances and conditions under which stockholders and security holders, who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner, and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. AMERICAN CITY MAGAZINE CORPORATION.

Sworn to and subscribed before me this 8th day of October, 1947
New York County Clerk's No. 296
(My commission expires March 30, 1948)

EDGAR J. BUTTENHEIM, Pres.
EDWIN WAGNER
Notary Public
New York Co., N. Y.

Eleven Feet of Lift Folds Into Machine Contour

Among the quick-change lifting attachments for the Wagnermobile Lift are a crane boom, lifting forks, and ½ and ¾ yard scoop buckets.

A heavy duty lift truck that will handle 6,000 pounds to a height of 8 feet, or 4,000 pounds to 11 feet, yet whose hydraulic lift collapses completely into the truck body, is in production at Mixermobile Manufacturers', Portland, Ore. With the lift in its lowered position there is no track or front obstruction to prevent the Wagnermobile Lift from passing under low head clearance.

Weighing 7,425 pounds with fork and boom, the machine can work inside narrow, tight quarters, even freight cars. A variety of quick-change attachments are available, making possible the handling of a variety of heavy or bulky material — lumber, pallets, grain, gravel, sheet steel, pipe, castings, and other odd-shaped loads.

Fertilizer Available

The availability of a tried fertilizer will be good news to many engineers, superintendents, and commissioners of public parks and cemeteries. Agrico is made to feed lawns, shrubs, and trees. Its extensive use in cemeteries brings to mind a recent report of the International City Managers' Association showing that more than 700 cities now own and operate cemeteries. Actually 40% of all municipalities over 5,000 population operate cemeteries in competition with the privately owned, stressing the permanency of municipal cemeteries. Cemeteries, of course, are additional to the hundreds of thousands of municipal park areas. Agrico comes in bags and is sold by truckload and carload by The American Agricultural Chemical Co., New York 7, or through thousands of dealers who, in general, have in stock 20 to 100 tons.

This new HEIL
COLECTO-PAK
Municipal Refuse Disposal Body

gives you

★ Low loading height
★ Double capacity
★ Complete enclosure
★ Easy maintenance

Bucket unloads in less than a minute under fingertip control.

Automatic, hydraulic-operated packer plate packs 20 yds. in a 10-yd. body.

Tapered body construction assures speedy discharge regardless of compression.

The all-enclosed, water-tight Heil Colecto-Pak is the answer to your search for a modern method of speeding-up, simplifying, and improving garbage collection and disposal.

This unit has a ¾-yard loading bucket at a 35-inch height making it extra easy to load. This "power-lifted" bucket deposits load and returns to starting position in less than a minute. At the same time the hydraulic-operated packer plate is compressing the material down toward the discharge end. It is possible to compress 20 yards of wrapped garbage into this 10-yard body.

With this unit your city has a clean, sanitary means of collecting garbage with none of the unsightly and unsanitary features imposed by "open body" collectors. Your city can feel proud of its advanced thinking in purchasing a Heil Colecto-Pak.

BH-114

Write for bulletins.

ARMY NAVY
THE HEIL CO.
GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

Comfort for Truck Drivers

- Roomier Cabs with 8 Inches More Seating Width
- Adjustable Seats with 73 Individually Wrapped Springs
- Weather-Sealed Windshields with 20% More Visibility
- Advanced Circulating Fresh Air Ventilation System
- Three-Point Cab Mounting with Rubber Stabilizers
- Newly Styled Exclusive GMC Bumper Bar Grille

All New... THROUGH and THROUGH

Truck owners and drivers everywhere are praising new light-medium duty GMCs for their leadership in post-war construction and design. Cabs are all-new, all-steel with flexible, rubber-cushioned mounting . . . wider and deeper, adjustable seats . . . circulating, fresh air ventilation . . . complete insulation and soundproofing . . . greater visibility in windshields, doors and rear windows.

For extra value and dependability there's GMC's stronger, sturdier chassis and improved, war-proved engines. For outstanding appearance and added stamina there's GMC's advanced new styling and exclusive front-end construction.

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

New GMC grilles incorporate a protecting bar of heavy bumper stock at top and sides. Frame mounting and angle bracing add greater strength.

GMC's new cabs circulate fresh air by means of a revolutionary new ventilation system. You can have forced air heating and defrosting, too, if desired.

THE TRUCK OF VALUE

GMC TRUCKS

GASOLINE • DIESEL

10,000 Trees Planted in One Day by Two Men

This 2-man crew can plant 10,000 seedlings in one day with the Lowther Tree Planter.

Reforestration projects may be speeded up appreciably with the use of a two-man-operated Lowther Tree Planter, manufactured by the Harry A. Lowther Co., 141 West Jackson Blvd., Chicago, Ill., which established a record of 10,000 trees planted in one day.

The planter consists of a narrow rectangular frame about 6 feet long, the front end of which is mounted on sturdy wheels equipped with 6.00 x 16 tires, and the rear with two 16-inch pneumatic-tired wheels which serve as packing wheels. Interchangeable cast-iron packing wheels are also provided for heavier soils. Suspended within the frame and hinged to it at the front is a trenching and planting unit consisting of a 28-inch disc coulter and a plow into which planting guides are built. The tree planter can be handled by a tractor of 30 hp or more.

When the hydraulic lift is released, the coulter and plow settle into the soil, the plow sinking to a depth of 8 inches and the coulter 9 inches. A narrow furrow is opened, and the soil is held in this position by the planting guides until the operator, sitting astraddle the narrow frame, plants the roots within the planting guides. The packing wheels located to the rear of the planting guides then pack the soil around the plant.

A Roller For Every Job

Sturdy, heavy-duty rollers, engineered to stand up under the toughest conditions. Pierce-Bear Tandem Rollers are powered by economical Allis-Chalmers 4-cylinder industrial type gasoline engines. Variable weights, from 3½ to 5 tons with built-in water tanks for ballast and wet rolling.

Pierce Medium Bear
3½-5 tons

Pierce Baby Bear
2½-3 tons

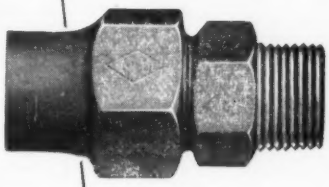
The new 2½-3-ton Pierce Baby Bear is designed for close-in work and small area maintenance. It works against a curb up to 25 inches high and within 1½ inches of a higher wall or building. Final drive is within the rear roll. Use Pierce-Bear Tandem Rollers for all-around performance. Write for folder.

Pierce-Bear Rollers

Lewis Manufacturing Co.

415 Hoefgen Ave.—San Antonio 6, Tex.

BETTER BRASS GOODS



. . . in the "Diamond Line"

Nation-wide acceptance of McDonald's Diamond Line of better brass goods has been going on since 1856. Behind these finer products and responsible for this reputation are expert craftsmanship, years of experience and advanced manufacturing processes. This McDonald Copper Service Pipe Coupling has male iron pipe thread on one end, and is for Copper Service Pipe of size stated at other end. In sizes ½, ¾, 1, 1¼, 1½ and 2 inches. Couplings with Female Iron Pipe Thread, on one end, and for Copper Service Pipe at both ends are also available.

EST. 1856 McDonald

A. Y. McDONALD MFG. CO.

DUBUQUE, IOWA

BRASS GOODS • PUMPS • OIL EQUIPMENT

FOR
ECONOMICAL

ICE CONTROL

SOLVAY
CALCIUM CHLORIDE

Stops Skids Quicker

Lasts Longer

Doesn't Freeze in Stock Piles

Solvay Sales Corporation

Alkalies and Chemical Products Manufactured by The Solvay Process Company

40 Rector Street New York 6, N. Y.

LOOK AHEAD INTO 1948

Bronze and copper will be "scarce metals" next year. We use bronze and copper in our Drinking Fountains and Hydrants.

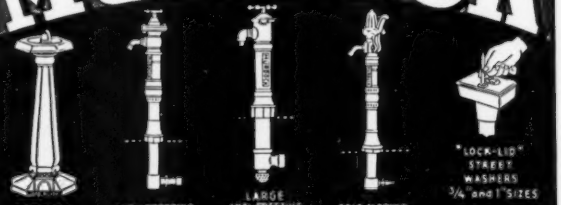
Scarce metals slow up production.

Forewarned is forearmed. Anticipate your needs and let us arrange our manufacturing facilities to meet your delivery requirements.

You order early. We deliver early.

The Murdock Mfg. & Sup. Co.
426 Plum St. Cincinnati 2, Ohio

MURDOCK


OUTDOOR DRINKING FOUNTAIN
ANTI-FREEZING COMPRESSION HYDRANT
LARGE ANTI-FREEZING HYDRANTS 1½" TO 3" INCLUSIVE
SELF CLOSING ANTI-FREEZING HYDRANT
"LOCK-LID" STREET WASHERS 3/4" and 1" SIZES

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(Since 1915)

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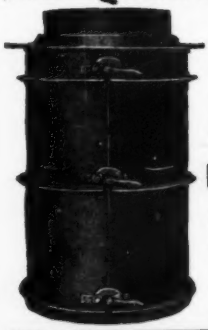
The "Quinn Standard"
FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over wherever concrete pipe is produced and used. Backed by over 30 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms and Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost

Quinn Heavy Duty Pipe Forms

For making pipe by hand methods by either the wet or semi dry processes. Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe—any length.

WRITE TODAY

Complete information, prices and estimates sent on request. Also manufacturers of Quinn Concrete Pipe Machines.

QUINN WIRE & IRON WORKS 1623 12th ST. BOONE, IA.

Snowplow Wax Speeds Snow Removal

Penn Drake Snow Plow Wax may be applied during the summer or fall when plows are detached from trucks; the wax will be effective the following winter, while preventing rust during lay-off periods.

A new liquid snowplow wax which the manufacturer states will make snow removal faster and easier is being marketed under the trade name of Penn Drake Snow Plow Wax. The wax creates a hard slick surface off which the snow slides easily, preventing the piling of snow and helping to eliminate breakdown because of overloading.

Applied with an ordinary paint brush, the wax also acts as an effective means of preventing rust. The plow can be placed in service within several minutes after application. One gallon covers about 300 square feet.

Dealer and distributor inquiries should be addressed to the Pennsylvania Refining Co., 2686 Lisbon Rd., Cleveland 4, Ohio.

Plans Formulated for Extension Of Pennsylvania Turnpike

Engineering work on the extension of the Pennsylvania Turnpike from Carlisle to Philadelphia, about 120 miles in length, is progressing under the direction of Roger B. Stone, Chief Engineer of the Turnpike Commission. The work will be done by Gannett Fleming Corddry and Carpenter, Inc., of Harrisburg, Pa., and New York City. The commission has already considered the several routes laid out by the engineering firm.

The aerial survey of the eastern extension has been awarded to Aero Service Corporation of Philadelphia.

Weiser to Represent Valve & Primer in Southwest

S. K. Weiser, Kenwell Corp., 416 No. Glendale Ave., Glendale 6, Calif., will represent the Valve and Primer Corp., 30 West Washington St., Chicago, Ill., in Nevada, Arizona, and southern California.

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LARGEST CITY TO SMALLEST VILLAGE

VALVES COMPLETE EQUIPMENT FOR WATER WORKS FILTRATION AND SEWAGE DISPOSAL PLANTS

LATEST "COREY TYPE" HYDRANTS

Write for Catalog and Information

IOWA VALVE CO.

General Offices: Hubbell Bldg., Des Moines, Iowa

Plant: Oskaloosa, Iowa

A check of shop records reveals some interesting facts.

1. Through sturdy construction, American or Niagara Meters serve longer before repairs are necessary.
2. When brought in for repairs, it is easier to take them apart.
3. If parts are worn, the replacements fit interchangeably piece for piece.
4. Buffalo Meters won't go together the wrong way.
5. The construction is so simple that special training is not needed to make average repairs.

If you let your meter shop records guide your purchases of new meters, you will buy "Buffalo".

Write for a copy of our service manual to help your shop handle Buffalo meter repairs most efficiently.

AMERICAN BRONZE CASE

NIAGARA GALV. IRON CASE

WATER METERS

BUFFALO METER COMPANY

2902 MAIN STREET • BUFFALO 14, NEW YORK

Simplicity

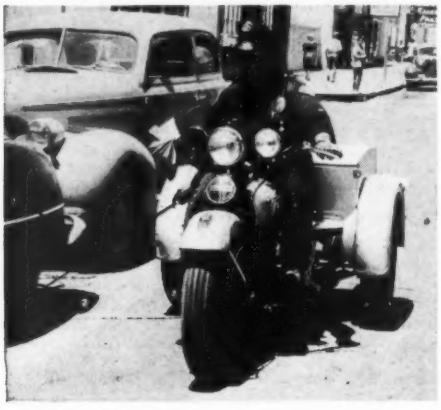
In Las Vegas, Nevada, it's —

HARLEY-DAVIDSONS EXCLUSIVELY!

Leading the parade during the Helldorado Celebration at Las Vegas are Sgt. Davis, and Officers Houghton, McCrary, Palace, LaVoie and Powell of the Harley-Davidson-equipped Police Squadron.

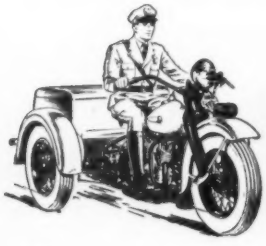
Motorcycles most effective for control of tourist traffic and holiday crowds

Officer Palace on his Harley-Davidson Servi-Car marks cars for parking. Like other cities, Las Vegas finds that one officer on a Servi-Car does a better car-marking job than several men on foot, thus releasing manpower for other duties. Servi-Cars are indispensable also for servicing parking meters, for patrolling crowded parking areas and for many other police uses.



"Out Where the West begins" — and the tourist ends his trek, control of traffic presents unusual problems. In Las Vegas, as in many other recreation centers, the seasonal influx of visitors, added to normal daily traffic, imposes extra burdens on the hard-working police department. Las Vegas police, therefore, turned long ago to motorcycles to multiply their manpower, and found that no other method compares with motorcycle patrol in reducing the accident rate and maintaining effective control of traffic. In your city also, the use of Harley-Davidson Motorcycles will enable you to get best results in modern traffic control. Ask your Harley-Davidson dealer about the superiority of Harley-Davidson Motorcycles, Servi-cars and Sidecars for police work.

HARLEY-DAVIDSON MOTOR COMPANY • Milwaukee 1, Wisconsin



HARLEY-DAVIDSON
POLICE MOTORCYCLES

Mosquitoes Don't Stand a Chance in Toledo, Ohio

Mosquitoes of the Toledo Area Sanitary District were the subject of an extensive extermination program this year. Here a Studebaker pickup is shown holding a 50-gallon power Bean sprayer, Model 4-A pump, to which is attached a 200-foot length of Neoprin hose spraying a Rohm & Haas DDT emulsion concentrate. During the latter part of the year, the Studebaker truck was mounted with a Todd Insecticidal Fog Applicator (TIFA).

Parkhurst to Manage Lee Hydraulic

Ray Parkhurst recently took over the management of the Lee Hydraulic Co., 297 River St., P.O. Box 804, Troy, N.Y., manufacturers of valve boxes, the Bardwell Power Wrench, and other products in the water works field.

Mr. Parkhurst was previously vice-president-sales manager and director of the Rensselaer Valve Co., Troy, N. Y.

Ray Parkhurst

New Hough Payloader

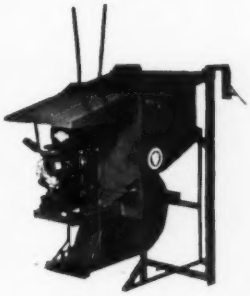
The Frank G. Hough Co., Libertyville, Ill., is manufacturing a new medium-size Payloader, the Model HF.

The new machine, a ¾-yard shovel, incorporates a 4-speed full-reversible transmission that provides high forward digging speeds plus high reverse maneuvering speeds with a minimum of shifting, according to the manufacturer. A single lever shifts gears into the desired speed, and then the operator controls forward or reverse by flipping a directional lever.

The bucket is operated by hydraulic power, and controlled by one lever.

The Model HF is particularly adaptable to excavation, stripping, grading, and handling coal, cinders, fertilizer. chemicals, salt, clay, borings, or any bulk material. Bulletin No. 166 gives the details.

THE "SCOTCHMAN"



TARCO'S SALT SAVER

Actually applies *theoretical* quantities. It's *fast*, mounts on any dump truck or pick-up in three minutes. Handles *bulk* or *bagged* material. Perfect salt pattern, no waste, *ordinarily* saves 50% or more. Full width, or right, or left, complete control. Quality built of *stainless* steel.

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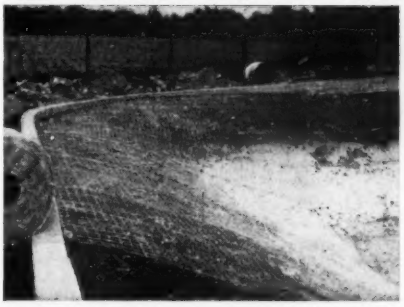

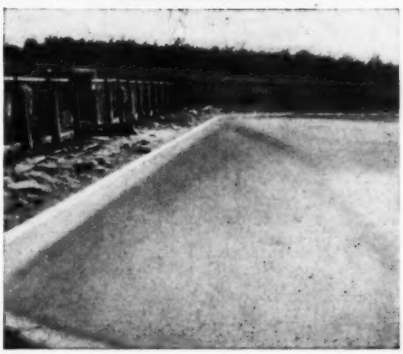

NO MAINTENANCE IN 22 YEARS

The before and after photos show a reservoir we re-lined with "GUNITE" in 1925 for the Village of East Aurora, N. Y. Recently Mr. V. E. Haemmerlein, Village Engineer, wrote us:

"The job you did of Guniting our reservoir is still in first class condition. Some hair cracks have developed near the top. I drilled one-half-inch holes where some of the cracks showed but find that they are only about one inch deep. They do not go beyond reinforcing. We have had no maintenance whatsoever."

We can similarly solve your problem if you have an old leaky or disintegrated reservoir. We invite you to call on us for complete information, recommendations or estimates on any "GUNITE" work which you may be planning.

Our 72-page bulletin D2300 describes this job and scores of other profitable uses of "GUNITE." Write for your free copy today.

ACRO-LYTE (Patent Applied For)

THE SUPER SAFETY PATROL BELT

HIGHLY VISIBLE IN DAYTIME
REFLECTOR OF LIGHT
LUMINOUS IN THE DARK

This dressy gray and white belt is highly visible in ordinary light.

At Night — sharply reflects head lights, flashlight or any other flood lighting.

In Total Darkness — glows brightly for many hours after being exposed for ten minutes to half hour in any light.

GAUNTLET

DAYLIGHT

DARKNESS

Webbing covered the same as Acro-Lyte Belt with Reflecting and Fluorescent materials, 3¾" wide. Can be worn as gauntlet or arm band. Adjustable with snap.

Adjustable sizes—Small, Medium, Large.

Acro-Lyte is a special webbing combined with two other fabrics designed particularly for safety purposes.
One is a highly reflective material that can be seen at great distances.
The other material is fluorescent and glows brightly in total darkness for many hours after being exposed to any light.
Acro-Lyte is non-toxic and has been tested under all kinds of weather conditions.

The product is limitless for the purpose of reducing highway accidents and directing traffic, especially at night. Assembled in many salable articles, principal uses of which are

Patrol Belt — **Cuffiet**
Gauntlet — **Webbing in rolls, etc.**

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374 Broadway, New York 13, N. Y.

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PIPE PHONE

Pays for itself many times over, when used in testing valves, checking leaks or water waste inside buildings, leaky closet valves and faucets.

You can actually hear the water dripping away in a leaky valve, faucet, or pipe.

Equally successful in detecting leaks in underground valves and pipe lines, by making contact at a hydrant or by using a contact rod.

Every service man and meter reader should have a pipe phone as part of his regular equipment.

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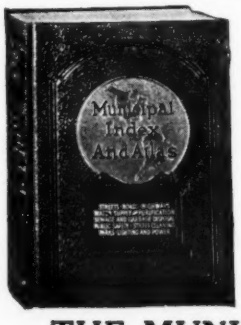
About 50 Tokheim Cut 1514 Induction-Driven Controllers, 110 volt A.C. 60-cycle, in weatherproof cabinet for wood pole mounting, just removed from continuous operation, Dayton, Ohio.

We will sell these controllers (without guarantee) in lots of 5. Price per controller $10.00, if picked up at our warehouse.

THE WAGNER-SMITH COMPANY
DAYTON 2, OHIO
Phone Adams 7288 — **541 W. Second St.**



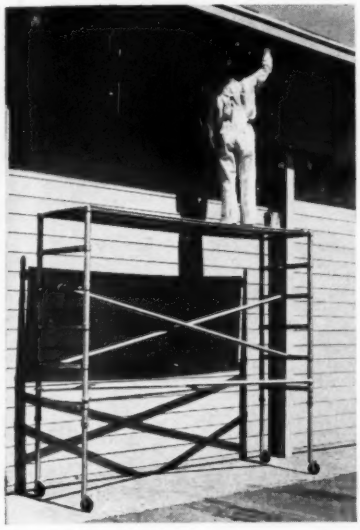
"WHO'S WHO IN MUNICIPAL SUPPLY"

is an important feature of the THE MUNICIPAL INDEX consisting of brief messages to municipal officials from all the manufacturers, who are sufficently interested in governmental business to contribute a functional statement about what their products can do for city officials. If you do not have the latest Municipal Index on hand please let us know.

THE MUNICIPAL INDEX
470 Fourth Avenue — **New York 16, N. Y.**

Up-Right Scaffold Makes 15-Foot Height Within Reach

The Up-Right scaffold may be adjusted to any height from 1½ feet to 8½ feet—bringing an object at a 15-foot height within easy reach—and may be



The casters on the Up-Right scaffold lock for safety and rigidity. Several units may be locked together.

used on even or uneven terrain; each of the four supporting legs can be adjusted 24 inches, retraction or extension being instantly manipulated by means of a locking collar and an expanding nut which allow sliding the threaded leg for adjustment.

Built of heat-treated aluminum alloy, the entire structure, including the 2-foot-wide plywood platform, weighs only 119 pounds and can easily be dismantled, set up, or transported by a single person. It is manufactured by Up-Right Scaffolds, Bank of America Bldg., Berkeley 4, Calif.

Ware Acquires Control Of American Water Works

John H. Ware, president of Northeastern Water Co., New York, N. Y., has acquired control of American Water Works Co., Inc., 50 Broad St., New York, N. Y., through Northeastern's purchase of shares of American.

John H. Ware

The combined water works system now to be operated by the management organization, headed by Ware and his associates, L. T. Reinicker, J. J. Barr, L. J. Ostermayer, and W. B. MacIndoe, is located in 22 states and supplies water to 232 communities.

Maltese Cross Fire Hose In Production

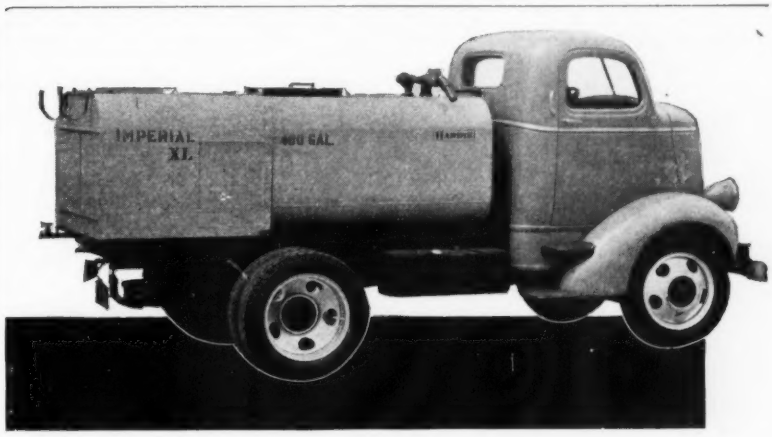
Resumption in production of its top brand Maltese Cross fire and chemical hose is announced by Hewitt Rubber Div., Hewitt-Robins Inc., Buffalo, N. Y.

J. H. Hayden, vice-president in charge of sales, said the lifting of government restrictions and the availability of special long staple cotton necessary to produce the high tensile duck has enabled Hewitt to reinstate this prewar brand of hose. Features of the product are light weight, easy coiling, high burst resistance, protection against deterioration by mildew, while the rubber cover eliminates the necessity of drying after use. The rubber cover also serves the purpose of protecting the duck carcass from acid fumes and oil.

Draper New Solvay Manager In St. Louis

Neal M. Draper has been appointed manager of the St. Louis branch of Solvay Sales Corp., 40 Rector St., New York, N. Y., replacing M. S. Johnson who has been transferred to the Boston office. Elmer Seener has been appointed assistant branch manager at St. Louis.

Solvay handles sales of alkalies and chemicals manufactured by the Solvay Process Corp.

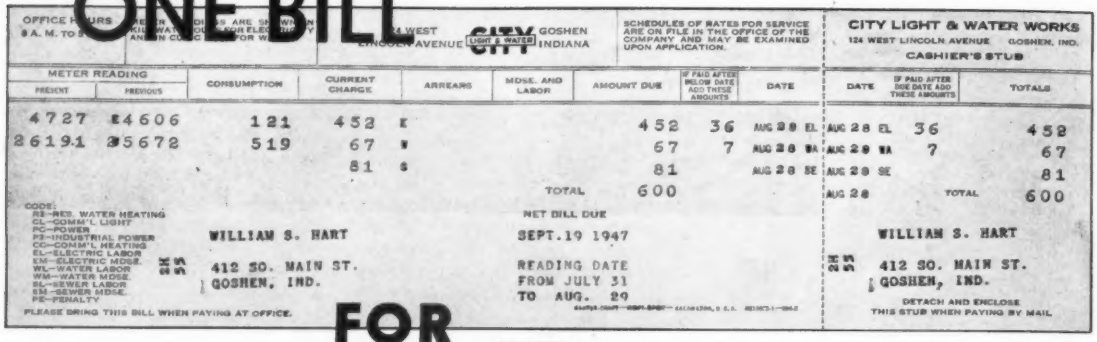


Hardie Specialized Shade Tree Sprayers and Spray Guns bring new speed, safety and economy into shade tree pest control. These big, mobile High Pressure Hardies provide ample capacity and pressure to spray the tallest trees from the ground. Hardie Shade Tree Spray Guns give better coverage, greater accuracy with a new ease in application. Write for Catalog. The Hardie Mfg. Company, Hudson, Mich., Los Angeles 11, Calif., Portland 9, Oregon, Export Detroit 26, Canadian C. W. Lewis, Grimsby, Ont.

Hardie DEPENDABLE SPRAYERS
THE ONLY SPRAYER THAT IS COMPLETELY LUBRICATED

In Goshen, Indiana

ONE BILL



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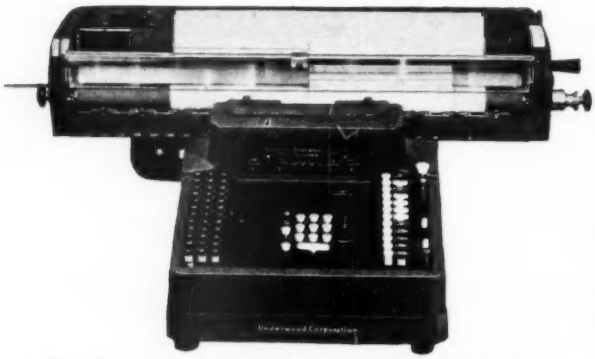

Sundstrand Model D Accounting Machine

Sundstrand automatically prints all charges and totals on the bill form and the stub — It provides separate totals for electric, water and sewerage charges — and also provides proof against errors in billing.

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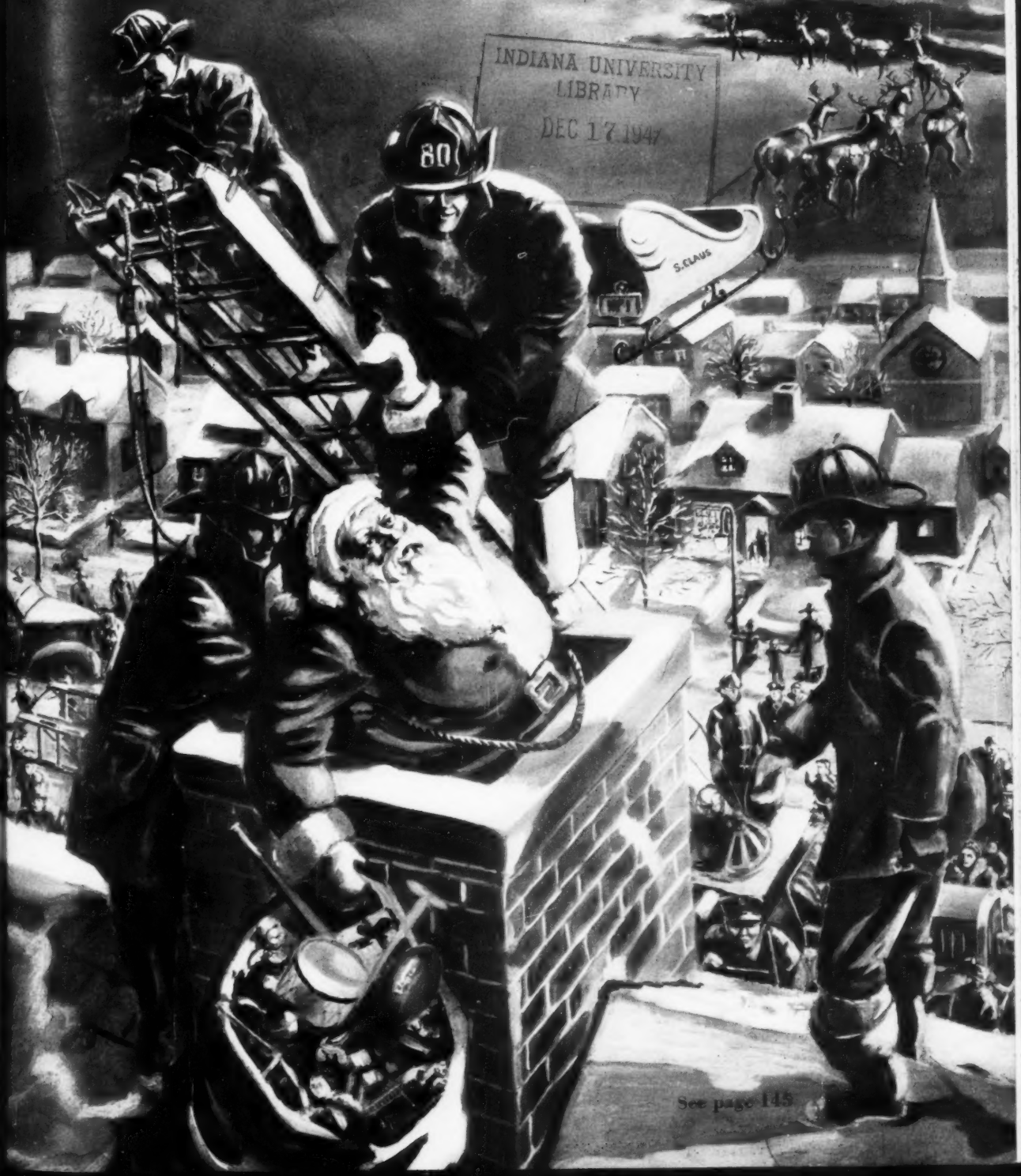

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